MTR-ST Head BOX
Far East
(Single, double)

Installation and use manual
(Rev. -)

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User Manual

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1 Introduction

The MTR-ST head is a good modular product, is possibility to control it with a serial system that give information about the dispenser and head status.
This system is create observing the maintenance/service's needs in fact MTR-ST is easy to program (it not necessary to use notebook PCs) and is able to autocheck troubles.

1.1 Modularity

The basic product is MTR-ST Single/Single Face Configuration, it is able to control 1 dispenser with 1 hydraulics and 1 nozzle (Single config.) with 1 display (Single Face); it is possible to have the MTR-ST Double/Double Face, adding any modules, in this case the head control 2 dispenser, 2 hydraulic, 2 nozzle and 2 displays (1 for each side).

1.2 Remote control

The head can be connecting with a HOST that control all the operation on the dispensers. The host control consist in a simple recording of the events for each dispenser, or a complex control of permission's refuels of all dispensers; all this operations are possible because the firmware's heads communicate with a protocol that contains the functions needed.
For more information about the communication protocol referring to M02996MT *MASER AUTOMATION GMS* Manual.

1.3 Easy setting

It is possible to customise the head during the installation by using the programmable parameters for this reason the product is flexible and adaptable for foreign market needs.

1.4 Autocheck

The MTR-ST is able to check all events status trough a complex control that permits a fast operation's service, infact in case of failure the diplays shows the fault-code correspondent.

1.5 Description

Most important part of MTR-ST Head configurations:

- MTR-ST Single Unit	M30283
- MTR-ST Double Unit	M30246
- MTR Display with totalizer	M30249
- MTR Display without totalizer	M30247
- MTR Preset Unit (16 keys and 16 characters)	M30248
- MPG Pulser	M40231
- MTR Display/Preset Cable Double/Double side	M21051
- MTR Display/Preset Cable Double/Single side	M21069

1.5.1 MTR-ST Double Configuration

Main unit of system:
- to the MTR-ST are connect the displays, the pulsers and the preset units
- in the terminal board there are the power output for driving the contactors
- there is output for vapour recovery system
- RS485 interface with HOST connection
- Power fail system for recording last refuel events on volatile support
- Optoinsulation for each input or output
- Possibility the driving 2 hydraulics, 2 nozzle with display for each side of the dispenser.

1.5.2 MTR Display Unit

Peripheral unit of system that show all the information necessary to the clients or service operator (in case of setting configuration it is necessary to use a PC):
- In the display there are 3 lines : 1 line shows the total amount (with 6 digit), 2 line shows the volume (with 6 digit), 3 line shows the unit price (with 4 digit)
- For each line it is possible to set more decimals
- MTR Display Unit is rearlighting in different colours
- MTR Display Unit can have an electromechanical totalizer (with 7 digit) that counts the total amount of litres refuelled from the nozzle associate.
- Is connect via serial with the head and receive main supply from the head
- MTR Display Unit have a special circuit that conserve all the information of last refuels events until 20min after power fail
- MTR Display Unit Address: it is possible to set the address of the display unit setting the jumpers presents in the connector used for the serial connection, for the reason is possible to have in the same serial line until 4 MTR Display Unit, in according to the setting configuration jumpers on the display cable.
- The communication troubles between MTR-ST and MTR Display Unit are displayed on the 3rd line of the displays working.

1.5.3 MPG PULSER

Is an increasing encoder build inside an explosion-proof case, it works intercepting 2 light beams. The pulser works follow an optical principle: a disk breaks two light beams. Each light beam drives a channel that produces a squared wave. The waves are phase shifting of 90° for inform the head about rotation of the pulser (clockwise or counterclockwise).

Each pulser is monitoring by MTR-ST in two ways:

- MTR-ST verifies that the absorption of pulser is in a right range of current.
- MTR-ST verifies that the gap between the pulses's number of any channel is in a right range.

Both failure condition is shows on the display at the beginning of refuel, for reset the failure message it need to put the nozzle in the dispenser and do a new refuel operation.

1.5.4 Preset Unit

The Preset Unit is a system that contain:
- Label keyboard with 16 keys
- LCD Display with 16 characters lighting
- The contrast of the display is setting trough the keyboard directly (keys F1 and F2)
- Is connect at MTR-ST and MTR Display in serial way, the main supply is made by the same connection
- Preset Unit have address, and it is possible to connect until 2 Preset Unit at the same MTR-ST
- The setting is made by the main system unit (MTR-ST) and don't need any program operation
- With Preset Unit it is possible to set volume refuelable and unit price, it needs to digit the value (volume/price) and selects preset mode. The dispenser near the target reduces the fuel-flow and arrives at the value prefixed.

1.6 Head turning-on

The turning-on operation consists in supplying the head with voltage corrected in accordance with working specification data.
At the turning-on the head can delay some seconds to begin working with reference to the initial programmable delay, in order to let all connected devices correctly start.
Than the display cards are tested to check if the display is perfectly working and the operation finishes displaying on each connected display card the entered unit price and the last delivery data.

1.7 Head turning-off

In case of supply voltage drop, the possible delivery in course is stopped and the relative data are stored in an EEPROM memory at illimitated retaining.
In addition, the displays show an error message indicating the voltage drop, which is displayed with the last delivery data for about 20 minutes on the LCD display.
However, when the head is in operation again, it shows the last effected delivery data, allowing a possible check.

1.8 Technical Characteristics

Max flow-rate	250 Lit/min.
Display	Liquid crystal display 6 digit per total amount line 6 digit per volume line 4 digit per unit price line lighting
Hydraulic input 1	2 channels for each pulser 1 input control of minimum level at 12Vdc 1 input nozzle switch at 12Vdc 4 input preset keyboard
Hydraulic output 1	1 driver channel vapour recovery system 1 control contact engine at 28Vac 1A 1 control high-flow solenoid at 28Vac 1A
Hydraulic input 2	2 channels for each pulser 1 input control of minimum level at 12Vdc 1 input nozzle switch at 12Vdc 4 input preset keyboard
Hydraulic side output 2	1 driver channel vapour recovery system 1 control contact engine at 28Vac 1A 1 control high-flow solenoid at 28Vac 1A
Other input	MAN/AUT control at 12Vdc Program button PR Increase button IN Restore metric parameters switch SE 3 input for MIX configuration
Black-out protection	Saving data Display for 20 min from last refuel operation Display last refuel operation at turn-on head
Serials gate	1 gate for serial connection at MTR Display Unit and Preset Unit in Current Loop Mode 1 gate RS485 for serial connection at the host
Dimensions & weights	MTR ST D Unit: 350 x 310 x 70 mm x 2700 gr. MTR ST Q Unit : 330 x 425 x 70 mm x 3250 gr. MTR display Unit: 200 x 210 x 35 mm x 660 gr. MPG Pulser Unit: 63 x 92 x 36 mm x 350 gr. MTR Pred. Unit: 140 x 70 x 30 mm x 150 gr.
Temperature range	-20° C +60° C
Supply conditions	Voltage : 220 Vac -20% +10% Frequency : 50 Hz 60 Hz Power : < 40 W in max config.

1.9 State of the art

N.B. State of the art of the equipment stands for minimum configuration of the system for which this manual is valid, concerning both electronic cards revision and installed programs revisions.

The state of the art of the equipment, for which this programming manual is valid, must be like or more advanced than what follows:

MTR-CPU card

M20179 REV. H: MTR-CPU board double configuration
Gal MTE rev. 3.1
EPROM MTR-CPU rev. 7.60 Far East

INT-MTR card

M20518 REV. - : INT-MTR rev. - card

MTR-LCD/R card

M21031 REV. - : MTR-LCD 6 digit R
Microcontroller 68HC705C8 MTR LCD rev. 1.28 Far East

2 Service keys

The head unit is provided of two keys and a switch for each MTR-CPU board, necessary to the unitary prices modification and the parameters personalization programming and it has also an error simulation switch. The list and the relative function are the following:

- Programming key, " Pr" necessary to enter in programming mode to modify the price and the customise the head parameters. In this function it is possible to move on single parameter or digit.
- Increasing key, "In" necessary to increase the single digit (parameter or price)
- Simulation error key, "Se" this switch must be closed before modify some metric parameter or displaying errors messages (Italian Metric Office's request)

2.1 Unit prices programming

With a simple operation it is possible modify the pump A price and eventually also the pump B price in the case of a double head.
In the case that the head is configured as mixer it is possible to modify the prices relative to the different mixer percentages up to a maximum of 8 different prices.
The necessary and essential condition in order to do the modification it is that the head is in repose situation and that any delivery is in course, so the nozzle/s must be put in their place.
To enter the unit price modification phase it is necessary to use the programming key, pressing it once so that it displays the price relative to the pump A.

2.1.1 Pump A price programming

The complete operations sequence necessary in order to modify the pump A unit price is the following:

- **1** - check that the head is on
- **2** - check that the nozzle/s are connected in their own place
- **3** - press the **Pr** programming key only one once
- **4** - the display card/s show the following information:

P-P 9	shows the parameter relative to the pump A price
XXXX	shows the pump A price

- **5** - through the programming keys use enter the new price beginning from the 1^ figure on the left in the following way:

  - with the increasing key **In** enter the correct value
  - with the programming key shift **Pr** pass to the following figure until the last figure introduction.

- **6** - the new price entering is over and to escape from this phase it is necessary to wait some seconds then the head starts its normal working by itself.
- **7** - escaping from the programming phase, the head effects a display test displaying at first all 8s then all blanks and at the end it writes the new entered price resetting volume and amount as display.

2.1.2 Pump B price programming

If the head is double, when the price entering relative to the pump A is finished (point 6 completed point in the operation sequence described in the previous paragraph), it is necessary to modify the pump B price.

- **1**- the display card/s show the following information:

P-P 10	shows the parameter relative to the pump B price
XXXX	shows the pump B price

- **2** - through the programming keys use, enter the new price beginning from the 1^ figure on the left as for the pump A price.
- **3** - when the price introduction relative to the pump B is finished in order to escape from this phase it is necessary to wait some seconds.
- **4** - escaping from the programming phase, the head effects a display test displaying at first all 8s and then all blanks, at the end it writes the new entered price resetting volume and amount as display.

2.1.3 Mixer prices programming

If the head is configured as mixer it is possible to program 8 different prices corresponding to 8 different mixture degrees that the head can manage.
The necessary operations in order to enter in programming are the same described in the **par. 2.2.1.** relative to the pump A; the only difference is that you have a 8 consecutive prices sequence as follows:

P-P 1	:	mixture price # 1
P-P 2	:	mixture price # 2
P-P 3	:	mixture price # 3
P-P 4	:	mixture price # 4
P-P 5	:	mixture price # 5
P-P 6	:	mixture price # 6
P-P 7	:	mixture price # 7
P-P 8	:	mixture price # 8

At the end of the last price introduction, in order to escape from this phase, it is necessary to wait only some seconds. Escaping from the programming phase, the head makes a display test displaying at first all 8s then all blank and at the end it writes the new price relative to the entered mixture, degree resetting volume and amount as display.

2.2 Parameters programming

In order to allow a head personalization, it is possible to modify a parameters series, some regarding, the specific head configuration, others the pump A functionality and others again the pump B functionality.
The three parameter types are identificated as follows:

"general" parameters	**P - 0 X**	general parameters identification
"pump A " parameters	**P - 1 X**	pump A parameters identification
"pump B " parameters	**P - 2 X**	pump B parameters identification

A detailed different programmable parameters description happens in the next paragraphs.
An head parameters programming feature is that they are shared in two groups about the "Metric" importance of each single parameter; so we have some parameters groups as follows:
"Metric" parameters
"Not Metric" parameters
The difference between those two groups is in the programming accessibility, in fact the first group concerning the **"Metric"** parameters is subordinate to the metric tie, so to modify the parameters is necessary to remove the metric tie put to protect the simulation switch and then operate on it besides the programming switch.

2.2.1 Metric Parameters programming

To enter the **"Metric"** parameters programming phase it is necessary to operate as follows:

- 1 - switch off the head
- 2 - remove the protection metric and switch-on error simulation switch
- 3 - wait about ten seconds before switching on the head
- 4 - switch on the head again
- 5 - each display shows the relative address and the program release then the message **SP** (Start Programming) that is displayed
- 6 - turn on the **SE** error simulation key
- 7 - press the **Pr** programming key until the display shows that message
- 8- after some seconds the head makes a display clear then it displays the first programmable parameter as follows:

P- 0 3	this is the "general" type parameter
X	this is the parameter value

- 9 - effected the parameter modification go on modifying parameter by parameter.
- 10 - to escape from the parameter programming phase it is necessary to have a quick look at all parameters until the message **EP** (End Programming) is displayed after that the head effects a displays check and displays the unit price and the last effected delivery.

N.B. During this programming phase is possible to modify all programming head parameters.

2.2.2 Not Metric Parameters programming

To enter the **" Not Metric"** parameters programming phase it is necessary to operate as follows:

- 1 - switch off the head
- 2 - wait about ten seconds before switching on the head
- 3 - switch on the head again
- 4 - each display shows the relative address and the program release then the message **SP** (Start Programming) is displayed
- 5 - press the **Pr** programming key until the display shows that message
- 6 - after some seconds the head makes a display clear then it displays the first programmable parameter as follows:

P- 0 1	this is the "general" type parameter nr. 1
X	this is the parameter value

- 7 - effected the parameter modification go on next modifying parameter by parameter (is possible to modify only those "**Not Metric**").
- 8 - to escape from the parameter programming phase it is necessary to have a quick look at all parameters until the message **EP** (End Programming) is displayed after that the head effects a display check and displays the unit price and the last effected delivery.

N.B. During this programming phase is possible to modify only the **"Not metric**" type programming head parameters. However those of "Metric" type are displayed but it is not possible to modify them.

2.2.3 Programming parameters list

N° PAR.	*Description*	*Parameter kind*	*Pump*
P – 0 1	Head Configuration	NOT METRIC	GENERAL
P – 0 2	Head address	NOT METRIC	GENERAL
P – 0 8	Preset key n° 1 value (not used)	NOT METRIC	GENERAL
P – 0 9	Preset key n° 2 value (not used)	NOT METRIC	GENERAL
P – 0 10	Preset key n° 3 value (not used)	NOT METRIC	GENERAL
P – 0 11	Numerical Rounding amount/litres	METRIC	GENERAL
P – 0 15	Numerical Rounding Value	METRIC	GENERAL
P – 0 16	Amounting masking	METRIC	GENERAL
P – 0 17	Decimals number on amount line	METRIC	GENERAL
P – 0 18	Decimals number on volume line	METRIC	GENERAL
P – 0 19	Decimals number on unit price line	METRIC	GENERAL
P – 1 10	Calibration coefficient	METRIC	A
P – 1 11	Product/Nozzle part number	NOT METRIC	A
P – 2 10	Calibration coefficient	METRIC	B
P – 2 11	Product/Nozzle part number	NOT METRIC	B

2.2.4 "General " parameters

- Head configuration -

P- 0 1 first "general" parameter identification
X this is the parameter value

The head can have four different configurations according to the type of connection and the first programmable parameter allows the identification of the type of configuration that the head must assume.

- configurations -	- parameter value -
single single-sided head	1
single double-sided head	2
double single-sided head	3
double double-sided head	4

- Head address -

P- 0 2 second "general" parameter identification
XX this is the parameter value

The second"general" parameter is relative to the address to give to the head when this is connected to an intelligent unit system as for example, a PC.
The address can change from 1 to 99 and, as default value, always correspond to 1.

- Use as mixer -

P- 0 3 third "general" parameter identification
X this is the parameter value
The third "general" parameter is relative to the presence of the mixer, that is, to the distributor use as mixer.

- configuration -	- parameter value -
normal functioning	0
functioning as mixer with the pulser after the mixing point	1
functioning as mixer with the pulser before the mixing point (control of the compensated delivery)	2

The default value 0 and the parameter is not displayed.

- Turning on delay -

P- 0 4 fourth "general" parameter identification
XXX this is the parameter value

The fourth "general" parameter is relative to the delay in the head turning-on and consists of a variable number of waiting seconds, before that the head is operative since it is on.
The delay that can be introduced varies from 5 to 999 seconds.
The default value 5 and the parameter is not displayed.

- Volume unit selection -

P- 0 5 fifth "general" parameter identification
X this is the parameter value

The fifth "general"parameter is relative to the volume unit selection that can be in gallons or in liters.

- configuration-	-parameter value-
volume unit in gallons	0
volume units in litres	1

The default value 1 and the parameter is not displayed.

- Pulses number per volume unit -

P- 0 6 sixth "general"identification
XXX this is the parameter value

The sixth "general" parameter is relative to the pulses number per volume unit and it is a number varying from 1 to 999. As default value, the head is programmed with 100 pulses per volume unit and actually it is a not modifiable value.
The default value 100 and the parameter is not displayed.

- "Blank" on the initial displaying -

P- 0 7 seventh "general" parameter identification
XX this is the parameter value

The seventh "general" parameter is relative to the hundredth number of volume unit to screen as display at a delivery beginning and is a value varying from 0 to 99.
The default value 10 and the parameter is not displayed.

- Predetermination key 1 value -

P- 0 8 eighth "general" parameter identification
XXXXX this is the parameter value

The eighth "general" parameter is relative to the value programming regarding the nr. 1 preselection key. As default value, the nr. 1 key is programmed at 5 (not used)

- Predeterminator key 2 value -

P- 0 9 ninth "general" parameter value identification
XXXXX this is the parameter value

The ninth "general" parameter is relative to the value programming regarding the nr.2 preselection key. As default value the nr. 2 key is programmed at 10 *(not used)*

- Predeterminator key 3 value -

P- 0 10 tenth "general" parameter identification
XXXXX this is the parameter value

The tenth "general" parameter is relative to the value programming regarding the nr.3 preselection key. As default value, the nr.3 key is programmed at 25 *(not used)*

- Numerical Rounding -

P- 0 11 eleventh "general" parameter identification
X this is the parameter value

The eleventh "general" parameter is relative to the rounding off of xxx +/- 2 cent.

- configuration-	- parameter value -
no rounding off	0
rounding off of +/- x centilitres	1
rounding off of +/- x amounts	2
both	3

- **Numerical Rounding Value -**

P- 0 15 fifteenth "general" parameter identification
X this is the parameter value

The fifteenth "general" parameter is relative to the kind of predetermination associated to the respective keys

- configuration-	- parameter value -
rounding x centilitres/amount	1
rounding x centilitres/amount	2
rounding x centilitres/amount	3

- **Amount masking -**

P- 0 16 sixteenth "general" parameter identification
X this is the parameter value

The sixteenth "general" parameter is relative to the masking and rounding off of one or two significant digits, to allow the manage of one or more decimal price, but with full amount.

- configuration-	- parameter value -
no masking digit	0
last digit masking and rounding on last but one	1
last two digits masking and rounding on last but two	2

The default value 0

- **Decimal number on amount line –**

P- 0 17 seventeenth "general" parameter identification
X this is the parameter value

The seventeenth "general" parameter is relative to the decimals number present on the amount row (comma position).

- configuration-	- parameter value -
no decimal (decimal point out)	0
one decimal	1
two decimals	2

The default value 0

- **Decimal number on litres line –**

P- 0 18 eighteenth "general" parameter identification
X this is the parameter value

The eighteenth "general" parameter is relative to the decimals number present on the litres row (comma position).

- configuration-	- parameter value -
no decimals (decimal point out)	0
two masking digit	1

The default value 1

- **Decimal number on unit price line –**

P- 0 19 nineteenth "general" parameter identification
X this is the parameter value

The nineteenth "general" parameter is relative to the decimals number present on the price row (comma position).

- configuration-	- parameter value -
no decimal (decimal point out)	0
one decimal	1
two decimals	2
three decimals	3

The default value 0

- **Preset selection Litres (not displayed) –**

P- 0 20 fifteenth "general" parameter identification
X this is the parameter value

The fifteenth "general" parameter is relative to the kind of predetermination associated to the respective keys

- configuration-	- parameter value -
predetermination in euro	0
predetermination in litres	1

2.2.5 "Pump A" parameters

- Antiflow test enabled or not -

P- 1 2 "pump A" second parameter identification
X this is the parameter value

"Pump A" second parameter is relative to the antiflow-table device test if it is connected or not connected.

- configuration -	- parameter value -
not connected antiflow-table test	0
connected antiflow-table test	1

The default value 0 and the parameter is not displayed.

- Volume threshold for antiflow test -

P- 1 3 "pump A" third parameter identification
XXX this is the parameter value

"Pump A" third parameter is relative to the volume unit hundredths number after that the antiflow-table test starts. The value that can be introduced goes from 1 to 999 and is considered only if the antiflow-table test is connected.
The default value 30 and the parameter is not displayed.

- Antiflow test verify time -

P- 1 4 "pump A" fourth parameter identification
X this is the parameter value

"Pump A" fourth parameter is relative to the seconds number within which the antiflow-table test is made. The value that can be introduced as second number goes from 1 to 9 and is considered only if the antiflow-table test it is connected.
The default value 1and the parameter is not displayed.

- Maximum time without pulses for slow-down valve closing -

P- 1 5 "pump A" fifth parameter identification
XX this is the parameter value

"Pump A" fifth parameter is relative to the maximum time without pulses after that the slow-down valve is momentarily stopped. The maximum time is a value expressed in seconds that goes from 1 to 99.
The default value 10 and parameter is not displayed.

- Maximum time without pulses for delivery closing -

P- 1 6 "pump A" sixth parameter identification
XX this is the parameter value

"Pump A" sixth parameter is relative to the maximum time without pulses after that the engine is not connected and the delivery is closed. The maximum time is a value expressed in seconds that goes from 1 to 99.
The default value 60 and parameter is not displayed.

- Maximum delivery time -

P- 1 7 "pump A" seventh parameter identification
XX this is the parameter value

"Pump A" seventh parameter is relative to the maximum delivery time and is a value expressed in minutes 0' and from 3' to 22'.
The default value 0 and the parameter is not displayed.

- Advanced stop -

P- 1 8 "pump A" eighth parameter identification
X this is the parameter value

"Pump A" eighth parameter is relative to the engine advanced stop expressed in volume unit hundredths is a value that goes from 0 to 9.
The default value 0 and the parameter is not displayed.

- Volume hundredths number for slowing down beginning -

P- 1 9 "pump A" ninth parameter identification
XX this is the parameter value

"Pump A" ninth parameter is relative to the number of centilitres before which the delivery starts the slow-down phase according to the preset value (slow-down centilitres number). This programmable value goes from 00 to 99 (default value = 50 CL.).

P- 1 10 "pump A" tenth parameter identification
X this is the parameter value

"Pump A" tenth parameter is the electronic calibration coefficient of the meter (see regarding chapter 6) The value goes 09800 to 10200.

P- 1 11 "pump A" twelfth parameter identification
X this is the parameter value

"Pump A" twelfth parameter is the part number for product supply from the nozzle.
Part numbers:

1 – SUPER
3 – UNLEADED
4 - DIESEL

2.2.6 "Pump B" parameters

- Antiflow test enabled or not -

P- 2 2 "pump B" second parameter identification
X this is the parameter value

"Pump B" second parameter is relative to the antiflow-table device test if it is connected or not connected.

- configuration -	- parameter value -
not connected antiflow-table test	0
connected antiflow-table test	1

The default value 0 and the parameter is not displayed.

- Volume threshold for antiflow test -

P- 2 3 "pump B" third parameter identification
XXX this is the parameter value

"Pump B" third parameter is relative to the volume unit hundredths number after that the antiflow-table test device. The value that can be introduced goes from 1 to 999 and is considered only if the antiflow-table test is connected.
The default value 30 and the parameter is not displayed.

- Antiflow test verify time -

P- 2 4 "pump B" fourth parameter identification
X this is the parameter value

"Pump B" fourth parameter is relative to the seconds number within which the antiflow-table test is made. The value that can be introduced as second number goes from 1 to 9 and is considered only if the antiflow-table test it is connected.
The default value 1and the parameter is not displayed.

- Maximum time without pulses for slow-down valve closing -

P- 2 5 "pump B" fifth parameter identification
XX this is the parameter value

"Pump B" fifth parameter is relative to the maximum time without pulses after that the slow-down valve is momentarily stopped. The maximum time is a value expressed in seconds that goes from 1 to 99.
The default value 10 and the parameter is not displayed.

- Maximum time without pulses for delivery closing -

P- 2 6 "pump B" sixth parameter identification
XX this is the parameter value

"Pump B" sixth parameter is relative to the maximum time without pulses after that the engine is not connected and the delivery is closed. The maximum time is a value expressed in seconds that goes from 1 to 99.
The default value 60 and the parameter is not displayed.

- Maximum delivery time -

P- 2 7 "pump B" seventh parameter identification
XX this is the parameter value

"Pump B" seventh parameter is relative to the maximum delivery time and is a value expressed in minutes 0' and from 3' to 22'.
The default value 0 and the parameter is not displayed.

- Advanced stop -

P- 2 8 "pump B" eighth parameter identification
X this is the parameter value

"Pump B" eighth parameter it is relative to the engine advanced stopped expressed in volume unit hundredths and is a value from 0 to 9.
The default value 0 and the parameter is not displayed.

- Volume hundredths number for slowing down beginning -

P- 2 9 "pump B" ninth parameter identification
XX this is the parameter value

"Pump B" ninth parameter is relative to the number of centilitres before which the delivery starts the slow-down phase according to the preset value (slow-down centilitres number). This programmable value goes from 00 to 99 (default value = 50 CL.).

P- 2 10 "pump A" tenth parameter identification
X this is the parameter value

"Pump A" tenth parameter is the electronic calibration coefficient of the meter (see regarding chapter 6) The value goes 09800 to 10200.

P- 2 11 "pump A" twelfth parameter identification
X this is the parameter value

"Pump A" twelfth parameter is the part number for product supply from the nozzle.
Part numbers:

1 – SUPER
3 – UNLEADED
4 - DIESEL

2.3 Errors simulation

The head unit is provided of an error simulation key (called **Se**) useful, as the name says, to simulate the errors that the head can find and it is used as check by the metrical inspectors.

This key, as mentioned in the head homologation certificate, must be sealed up by the Weights and Measures office, and after each use, the head recertification must be asked.

The necessary operations to simulate errors are the following:

- 1 - Press once the **Se** simulation key putting it on ON position, and the displays show the first error **Er 03**
- 2 - In order to simulate the errors press the increasing key **In** and every time that the key is pressed it is possible to see in sequential way the error displaying.
- 3 - In order to escape from this stage press once the simulation key putting it on OFF position and the head tests the displays and will show the normal displaying.

The four errors that it is possible to simulate are the fundamental errors that the head must check in each condition and in order they refer to:

ER03 ⇒ power supply error on the encoder
ER04 ⇒ incongruency error on the encoder
ER05 ⇒ transmission error with a display
ER08 ⇒ communication error with host

3 Installation and connections

The MTR-ST Double/doubleside Unit connection is easy it is necessary to follow the main activity described :

Mechanical fitting :

- fit the MTR-ST Unit inside the dispenser
- fit the MTR Displays inside the dispenser
- connect the pulser on the meter in the lower part of the dispenser
- fit the Preset Units on the dispenser
- fit PR and IN keys at the head case

MTR-ST Double Unit Connections:

- connect the MTR Display Units to the display cable M21051 at CN2, CN3, CN5, CN6 connectors branded rispectly M1, S2, S1, M2.
- connect the Preset Unit to the display cable M21051 at CN1, CN7 connectors
- connect the CN4 "VR" display cable M21051 at "Display" connector of MTR-ST Unit .
- connect the pulsers cables.
- connect the nozzle switch cables and emergency switch cables (if requests)
- connect the solenoid cables.
- connect the coil's cables from conctators or relays.
- connect the control level switch's cables.
- connect the MAN/AUT switch cables.
- connect RS485 serial line
- connect the vapour recovery cables.

SUPPLY Connections:

- connect the MTR-ST Unit to 220Vac supply with suitable wiring cable.

LIGHTING:

- connect the MTR-ST Unit to 220Vac with suitable wiring cable for lighting
- connect the reactors to the lamps

For details of the connections described above referring to the following documents:
1) M21051TO *MTR_ST D/Ds Far East Display Cable*
2) M21069TO *MTR_ST D/Ss Far East Display Cable*
3) M30176DI MTR-ST single unit VR and PC assembly drawing
4) M30174DI MTR-ST double unit VR and PC assembly drawing
5) M02962SB Connection drawing of the MTR head in standard enclosure

N.B. In order to keep out working problems, before to do possible connections to other different pulser models from the MASER AUTOMATION MPG pulser, is necessary to ask Maser Automation the approval for that particular connection.

3.1 Connection with dangerous zone

On define dangerous zone the place where is fitted the hydraulics system inside the dispenser, to garantie the maximum insulation between hydraulics zone (dangerous) and electronic zone (not dangerous) it MUST use cable glade for all connection.

3.2 Serial connection

The HOST connection is made in according with RS485 standard, in this way it is possible to realise long connection (until 1200mt).On the same line is possible to connect several MTR-ST Units and others equipments that have to wiring with the RS485 standard.

To follow RS485 standard connection it must to observe follow rules:
1) the cable must to be shielded, flame-proof , with 3 wires (data, data*, GND)
2) each cable must to be connected to the earth trough the shield
3) in case of multiconnection it must to do parallel connection between the wires
4) at the extremity of the cable it must to be fixed a resistor 180 Ohm between data and data*

For connect MTR-ST Unit to a PC it must to use a special equipment MSA interface (RS232-RS485) installed before the PC.

3.3 Minimum signal level

In general inside the tanks are installed the Minimum Levels switch that troght MTR-ST give information about the level of fuel inside the tank.

3.4 Supply connections

To reduce the noises produced by engine's supply it must to connect separately the supplies lines of each electronic equipment, in this case engines, MTR-ST Unit, Lighting have different supply lines.

3.5 Manual/Automatic control

Normally MTR-ST is supplied in Manual mode function; this setting is made by a jumper fit on Head terminal board inside the dispenser (see M30246DI page 2). In case of system installation (some dispensers under HOST control), it need to install the Manual/Automatic control in a safety zone.

3.6 Solenoid connection

The solenoid has two commands to control the fuel-flow in case of refuelling, in general are used both in following ways:
1) low fuel-flow valve control (open/closed)
2) high fuel-flow valve control (open/closed)

is ***very important*** to connect both controls in the right way to avoid any wrong function of the dispenser.
In case of 24Vac supply is possible to connect the solenoid to the MTR-ST terminal board.

3.7 Lighting connection

On the MTR-ST Unit is possible to fit two reactors for lamps low energy, for each reactor is possible to connect until two bloom lamps 9W in serial configuration.

3.8 Single, double, singleside, doubleside:

MTR-ST Unit configurations:

SINGLE : the dispenser has 1 hydraulic/1 nozzle and pulser, solenoid, contactor, nozzle switch/emergency sw. referring rispectly to terminals : "PULSER1", "EV1", RELE1, NOZZLE SW.1 (see M30246DI page 2). (*)

DOUBLE : the dispenser has 2 hydraulic/2 nozzle and pulser, solenoid, contactor, nozzle switch/emergency sw. referring rispectly
for hydraulic1 to terminals : "PULSER1", "EV1", RELE1, NOZZLE SW.1
for hydraulic2 to terminals : "PULSER2", "EV2", RELE2, NOZZLE SW.2 (see M30246DI page 2). (*)

SINGLE SIDE : (it must to use M21069 Display cable) in case of single dispenser connect MTR Display to CN2 ("M1") connector of MTR display cable and Preset Unit to CN1 connector of MTR display cable.
In case of double dispenser connect
1st MTR Display to CN2 ("M1") connector of MTR display cable and Preset Unit to CN1 connector of MTR display cable and
2nd MTR Display to CN6 ("M2") connector of MTR display cable and Preset Unit to CN7 connector of MTR display cable.

DOUBLE SIDE : (it must to use M21032 Display cable) in case of single dispenser connect 2 MTR Display to CN2 ("M1") and CN5 ("S1") connector of MTR display cable and Preset Unit to CN1 connector of MTR display cable.
In case of double dispenser connect
1st MTR Display to CN2 ("M1") and CN5 ("S1") connector of MTR display cable and Preset Unit to CN1 connector of MTR display cable and
2nd MTR Display to CN6 ("M2") and CN3 ("S2") connector of MTR display cable and Preset Unit to CN7 connector of MTR display cable.
(*) : it must to know the kind of hydraulics installed inside the dispenser.

3.9 Emergency button

The emergency button (if request) must be installed between the nozzle switch and MTR-ST Unit, it works simulating the "insert nozzle" turning-off the dispenser (hydraulic, engines, pulser, and solenoid).

3.10 Vapour Recovery

In case of MTR-ST Unit fit inside a dispenser with Vapour Recovery circuit is possible to connect it to the MTR-ST electronic module. At the moment is not possible the connection to the DIN terminal board.

4 Head working

The head can have three different kinds of working at user discretion:
FREE method **with** free delivery or through predetermination
PRE-PAYMENT method
POST-PAYMENT method
The different functionality and the particularity of each working method are described in the next paragraphs.

4.1 FREE method

This is the petrol service traditional working system, where at the nozzle extraction, the delivery starts, the delivered volume counting and displaying are effected and only at the nozzle reinsertion, the delivery in course finishes. This working is possible only with the head set with **MANUAL mode.**
FREE delivery can happen also through predetermination and, in this case, it is possible to set the petrol quantity, or amount, that it is necessary to deliver. So, the delivery starts normally and finishes automatically when it reaches the value defined at the delivery beginning.
Some working particularities in case of a predetermination are the followings:

- the predetermination and the relative amount display that it is necessary to deliver is possible only when the nozzle is inserted.
- during the delivery, it is possible to cancel the possible predetermination effected, through the key CLEAR and so the delivery becomes free.
- in the same way during the delivery it is possible, in case there is not the predetermination, press one of the working keys and the delivery will finish at the last value relative the selectioned key.
- the slowing down effected at the end of the delivery is not fixed by a constant value, but it is a value function of the quantity petrol that is delivered in the time unit.
- when the next delivered value to the predetermined value is reached, an amount masking delivered is made, displaying on the display the prefixed value selectioned in the predetermination phase.
- in case of inactivity engine at the end of the delivery it is possible to work on the head, modifying the delivery advanced stopping parameter, in order to have a delivery correctly closed corresponding to the predetermination.

4.2 PRE-PAYMENT method

In this case the head has to be intelligently connected with a self-service system, from which it receives the messages relative to the operations to effect. In fact in the working as pre-payment the head wait for a message from the HOST to deliver an exact amount. When the delivery is finished the head, also taking out the nozzle, does not effect operations and waits for other messages from the system to which is connected.
This kind of working is possible only with the head set in **AUTOMATIC mode.**
During the working as Pre-payment the preset unit are not operative and it is not possible, for obvious safety reasons, to modify the delivery amount transmitted from the pre-payment system to the head.

4.3 POST-PAYMENT method

Also in this case the head must be connected ON-LINE with an HOST of system, during the working as post-payment the head always waits for the consens from the HOST unit in order to deliver, at the end relative data are transmitted to the HOST for the counting.
This kind of working is possible only with the head set in **AUTOMATIC mode.**
During the working as Post-payment the preset unit are active and obviously it is possible to select the amount that it is necessary to deliver.

5 Error messages

The head is provided with a self check system, that let always find, possible working anomalies, displaying on the display cards the kind of error happens.

The display messages relative to the errors that can happen are the following:

- **Er00:** indicates a power supply failure.
- **Er03** indicates a power supply problem on the encoder.
- **Er04** indicates an incongruency on the encoder channels.
- **Er05** indicates a communication error with a display card or error preset unit.
- **Er06** indicates a problem of minimum level in the tank.
- **Er07** indicates a petrol loss error (flameproof).
- **Er08** indicates a communication error with host.
- **Er09** indicates an error in the stored parameters in EEPROM.
- **Er088** is displayed when a totals counter is in overflow and over the maximum value.

When an error message is displayed, check, as following explained, which kind of anomaly it is then, if the failure persists also trying to insert and take out the nozzle, consult the technical assistance.

- **Er00:** happens when the head is turned-off or when there is not power supply to the head. If such message appears only on a display and not on all those connected to the head, therefore the power supply failure is limited only to that display so the problem could be due to the card connected from the display cable or to a prolem on the card.
- **Er03** happens when a power supply problem is found on the encoder. In particular if it has been found an irregular current absorption from the pulser the display shows this error message. If the error continues it is necessary to ask explanations to the technical assistance.
- **Er04** happens when it is found a counting difference among the two encoder channels. The problem can be caused from one of two channels of the encoder that does not transmit pulses to the head or can be due to a channel that it is not well connected to the terminal-board. Ask the technical assistance.
- **Er05** happens when there is a communication error with one or more display cards or errors preset unit.

Following is explaned the errors 05 list possible and meaning :

Message	meaning	Connector	Work lock
E 5 1	Communication problems with master 1 display	M1	Work-lock
E 5 2	Communication problems with slave 2 display	S2	Work-lock
E 5 3	Communication problems with master 2 display	M2	Work-lock
E 5 4	Communication problems with slave 1 display	S1	Work-lock
E 5 8	Com. problems Preset unit on side 1	CN1	No work lock
E 5 9	Com. problems Preset unit on side 2	CN7	No work lock

In case of communications problems with the display the head show the error message on the display and lock the dispenser's work, in this case it need to reset the dispenser .

In case of communications problems on the preset units, the errors messages are shown only on the display, if the problems is present when the head is in turn-on condition the error message is shows on the display and it disappears at first nozzle extraction. If the problem is present in start-up conditions the refuelling is locked and it is necessary to reset the head unit. In the table above is specified the respectly connectors of the display units and preset units.

- **Er06** happens when it is found a minimum level indication in the tank.

- **Er07** happens when there is the control on the petrol accidental losses, called "antiexpandment control". Such error is always found at the delivery beginning because the check is made in the first delivery centilitres and in a short timebreak. Both the centilitres number on which check is effected and the duration seconds of such check are programmable as initial parameters relative to the pump.

- **Er08** happens when there is a communication error with an intelligent system to which the head is connected. In that case, check that the connection cable is connected to both parts, otherwise ask the technical assistance.

- **Er09** happens when the CPU finds an error in the parameters stored in EEPROM. Such message can be displayed after the program replacement with a new release on the central card. In that case it is necessary reinsert the initial programming parameters in order to cancel the error and reset the head normal working.

- **Er088** happens during the delivery when the totals counters is overflow, is also possible to display the totals as below:

on Display	Preset keys	Meaning
9135	tank	Total Litres Side A
9135	amount	Total Amount Side A
9135	tank	Total Litres Side B
9135	amount	Total Amount Side B

6. Meter Calibration

The electronic head MTR/ST has properly programming parameters (1 for side), of metric type protected by a metric contraint; trough this parameters it is possible via software to correct the error of the meter. This because, as every mechanical tools, the meter needs a calibration to be in range of measure.

Parameters:
- P – 1 10 side A
- P – 2 10 side B

The correction parameters is also named "Calibration Coefficient". All the values delivered (number of pulses from pulser) are correct in base of the Calibration coefficient and are visualised on the display of the head.

Calibration coefficient value:

- 0,9800 – 1,0200

this value has 4 decimal, it hasn't a comma and the value go from 09800 to 10200.

Procedure of calibration (**for each side**):

1. Select the Calibration coefficient at 1,0000 and delivery a quantity of fuel >/= 10 litres (VVis);
2. Measure the real quantity of fuel delivery with measure test (VErog);
3. The Calibration coefficient is (VErog/VVis) in centilitres for each pulse;
4. Insert the parameter, for the side A the parameter is P 1 10, for the side B the parameter is P 2 10.

7. Connection drawings

CODE	DESCRIPTION	REL.
M02962SB	Connection drawing of the MTR head in standard enclosure	A
M03250SB	Connection drawing of the MTR head in standard enclosure with Eltomatic encoder	-
M03268SB	Connection drawing of the MTR-ST head with mixer	A
M03266ST	Drawing of the connection of the vapour recovery board to the double MTR-ST	-
M03267ST	MTR-ST head MAN/AUT connectin drawing	A
M03245ST	Diagram of connection between MTR-ST heads and PC by MSA interface (232-485)	-
M30176DI	MTR-ST single unit VR and PC assembly drawing	F
M30174DI	MTR-ST double unit VR and PC assembly drawing	F
M30281DI	MTR-ST Mixer assembly drawing	-
M03330NT	MTR-ST – Legalization plan	A
M30294DI	MTR-LCD Display for Far East Basic assembly drawing (without totalizer)	-
M30295DI	MTR-LCD Display for Far East Basic assembly drawing (with totalizer)	-
M21051TO	MTR D/B Far East Display cable	B
M21069TO	MTR D/M Far East Display cable	A
M21107TO	MTR S/B Far East Display cable	B

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STATO DI REVISIONE DEI FOGLI	Foglio	1	2	3	4	5	6	7	8	9	10
	Rev.	A	A	A							

Foglio di	Assieme Superiore	Formato	SALVO DIVERSA INDICAZIONE
1 3		A2☐ A3☒ A4☐	Le quote sono espresse in mm Le tolleranze sono espresse in micron
		GESTIONE CONFIGURAZIONE	
Materiale		Revisione: A — Visto: Secchi — Data: 7/1/97	ANGOLI ±1
Progetto: P1080	Scala	Firma — Data Diseg. M. Giovannini 07/01/97 Appro. Tedeschi 07/01/97	TOLLERANZE GENERALI: Grado di precisione MEDIO UNI 5307 Rugosità superficiale ✓
Disegno N°: M02962SB			

Titolo: SCHEMA DI CONNESSIONE
TESTATA MTR IN CONTENITORE STANDARD
(CONNECTION DRAWING OF THE MTR HEAD IN STANDARD ENCLOSURE)

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REVISIONI

Ind. Rev.	N° OM	Descrizione	Data	Approvazione
A	1748	Inserite uscite PRESET E V.R.	07/01/97	Tedeschi Mauro
–	–	Emissione	19/10/95	

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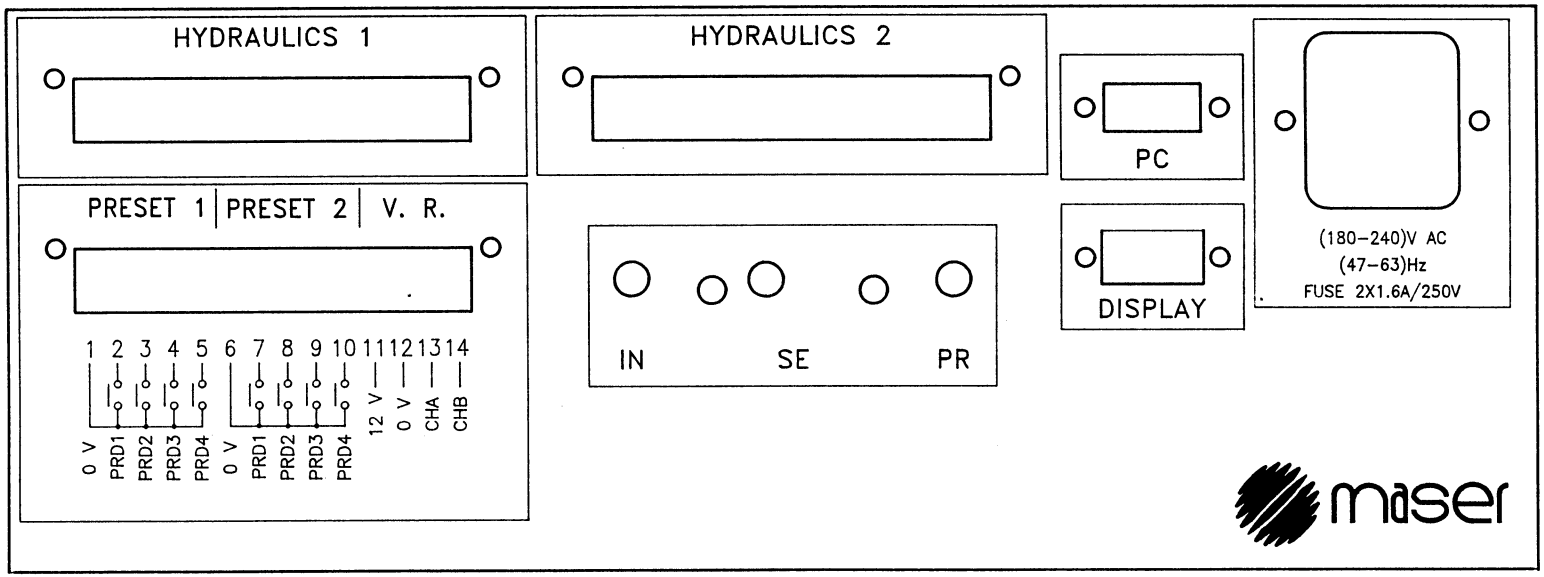

Disegno N°	Revisione	Scala	Foglio	di
M02962SB	A		2	–

Titolo

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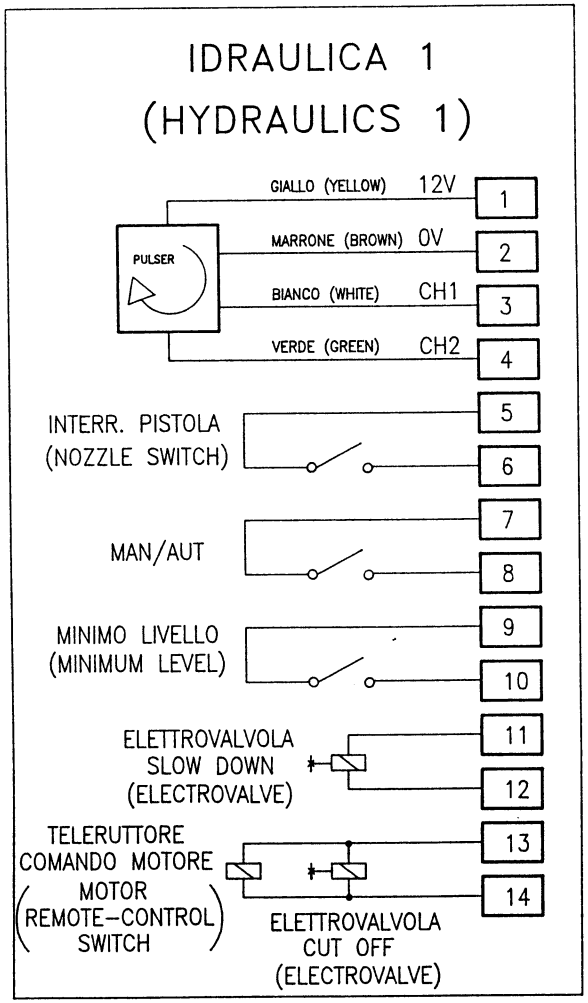
(HYDRAULICS 1)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PULSER
MARRONE (BROWN) 0V 2
BIANCO (WHITE) CH1 3
VERDE (GREEN) CH2 4
INTERR. PISTOLA (NOZZLE SWITCH) 5 6
MAN/AUT 7 8
MINIMO LIVELLO (MINIMUM LEVEL) 9 10
ELETTROVALVOLA SLOW DOWN (ELECTROVALVE) 11 12
TELERUTTORE COMANDO MOTORE MOTOR (REMOTE-CONTROL SWITCH) 13 14
ELETTROVALVOLA CUT OFF (ELECTROVALVE)

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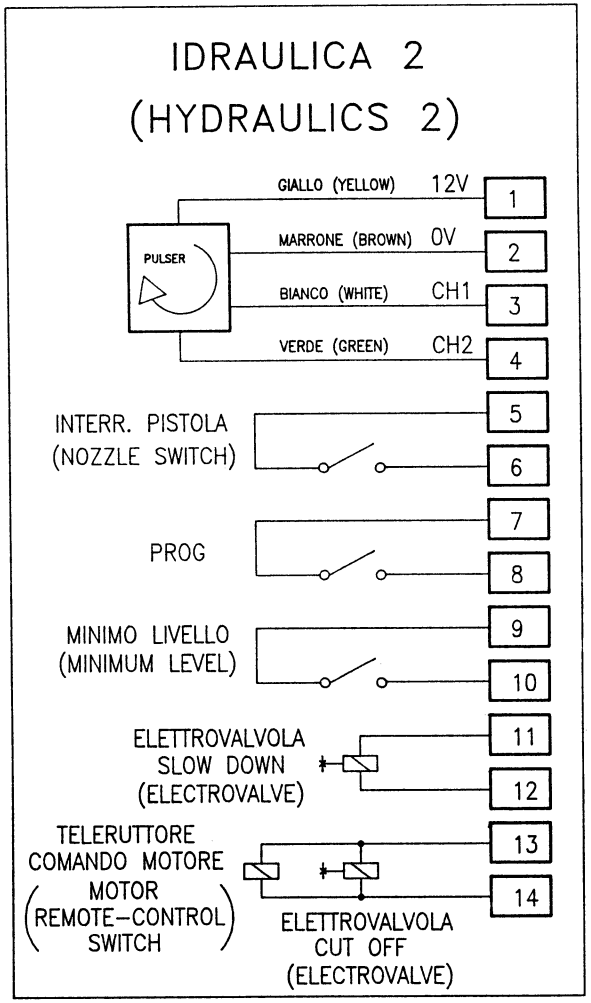
(HYDRAULICS 2)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PULSER
MARRONE (BROWN) 0V 2
BIANCO (WHITE) CH1 3
VERDE (GREEN) CH2 4
INTERR. PISTOLA (NOZZLE SWITCH) 5 6
PROG 7 8
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ELETTROVALVOLA SLOW DOWN (ELECTROVALVE) 11 12
TELERUTTORE COMANDO MOTORE MOTOR (REMOTE-CONTROL SWITCH) 13 14
ELETTROVALVOLA CUT OFF (ELECTROVALVE)

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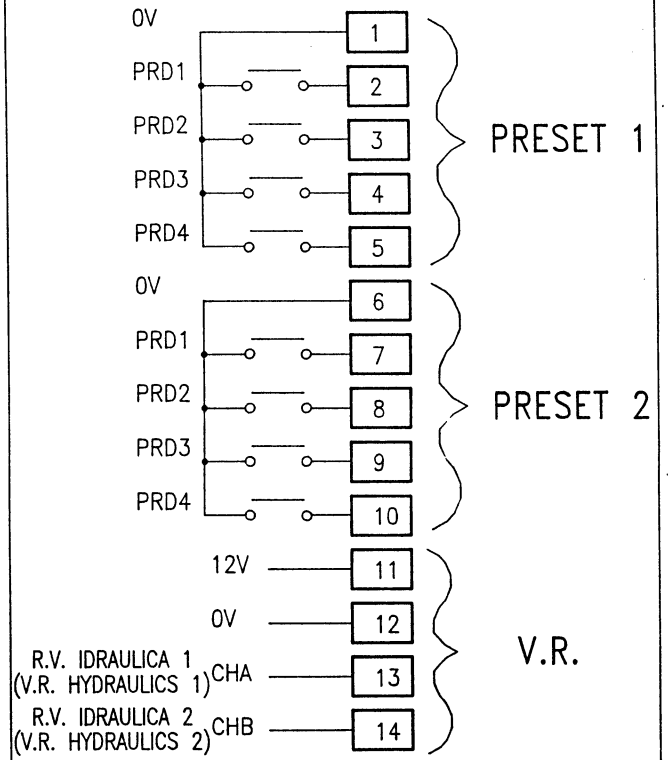
(PRESET1 / PRESET2 / V.R.)



Disegno N°	Revisione	Scala	Foglio	di
M02962SB	A		3	3

Titolo

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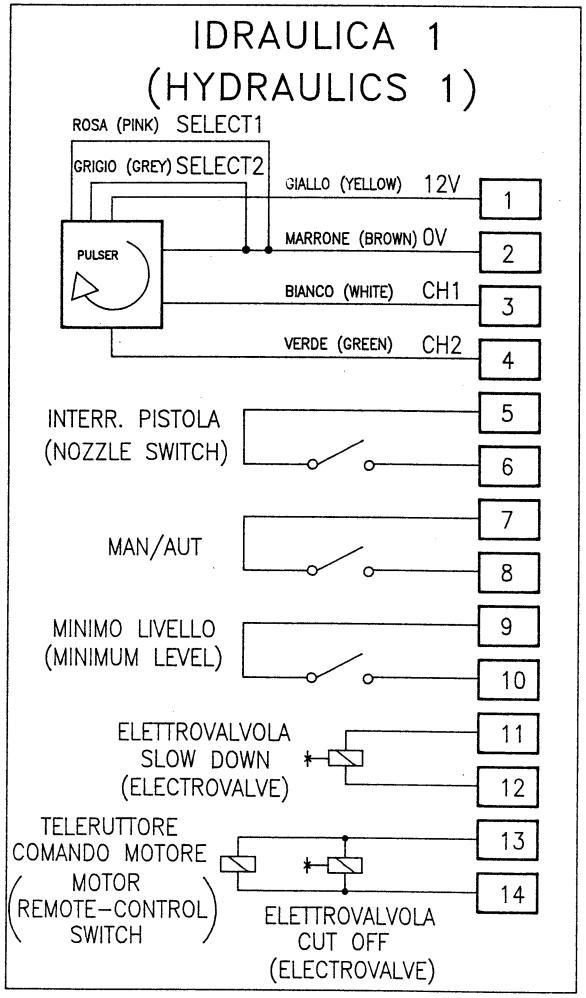

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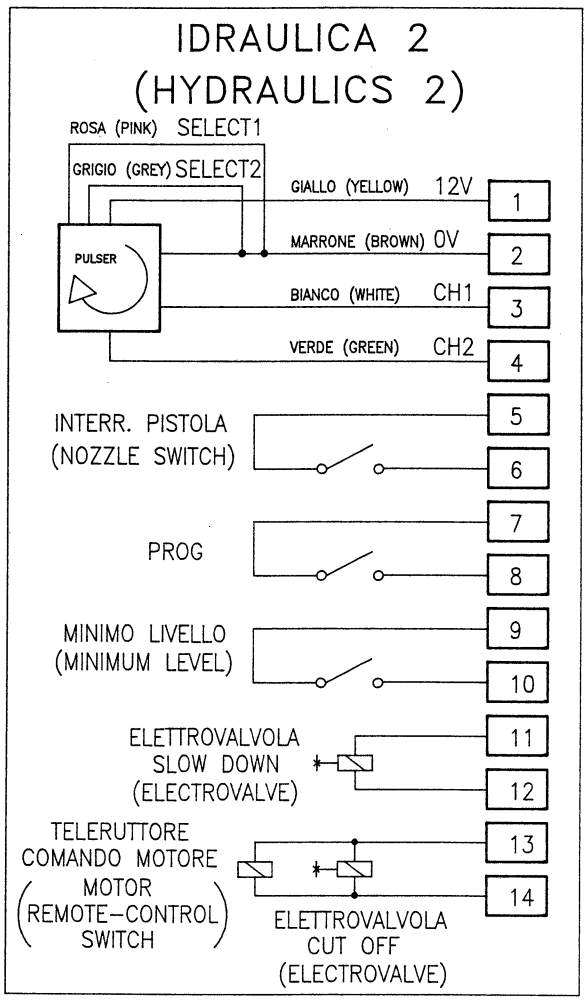

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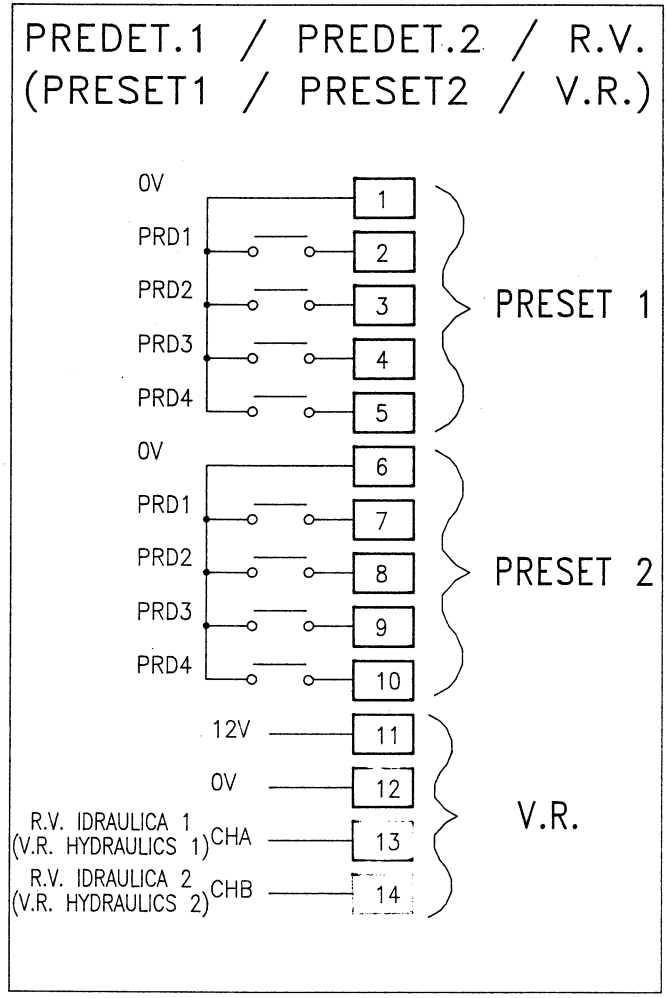

STATO DI REVISIONE DEI FOGLI	Foglio	1	2	3	4	5	6	7	8	9	10
	Rev.	–									

Foglio 1 di 1	Assieme Superiore	Formato A2☐ A3☒ A4☐	SALVO DIVERSA INDICAZIONE
		GESTIONE CONFIGURAZIONE	Le quote sono espresse in mm Le tolleranze sono espresse in micron
Materiale		Revisione – Visto Data 14/1/97	ANGOLI ±1
Progetto P1080	Scala	Firma Data Diseg. 14/01/97 Appro. 14/01/97	TOLLERANZE GENERALI: Grado di precisione MEDIO UNI 5307 Rugosità superficiale √
Disegno N° M03250SB			

Titolo: SCHEMA DI CONNESSIONE
TESTATA MTR IN CONTENITORE STANDARD CON PULSER ELTOMATIC
(Connection drawing of the MTR HEAD in STANDARD ENCLOSURE with ELTOMATIC encoder)

Disegno di proprietà della maser SOLUZIONI PER L'AUTOMAZIONE

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REVISIONI

Ind. Rev.	N° OM	Descrizione	Data	Approvazione
–	–	Emissione	14/01/97	

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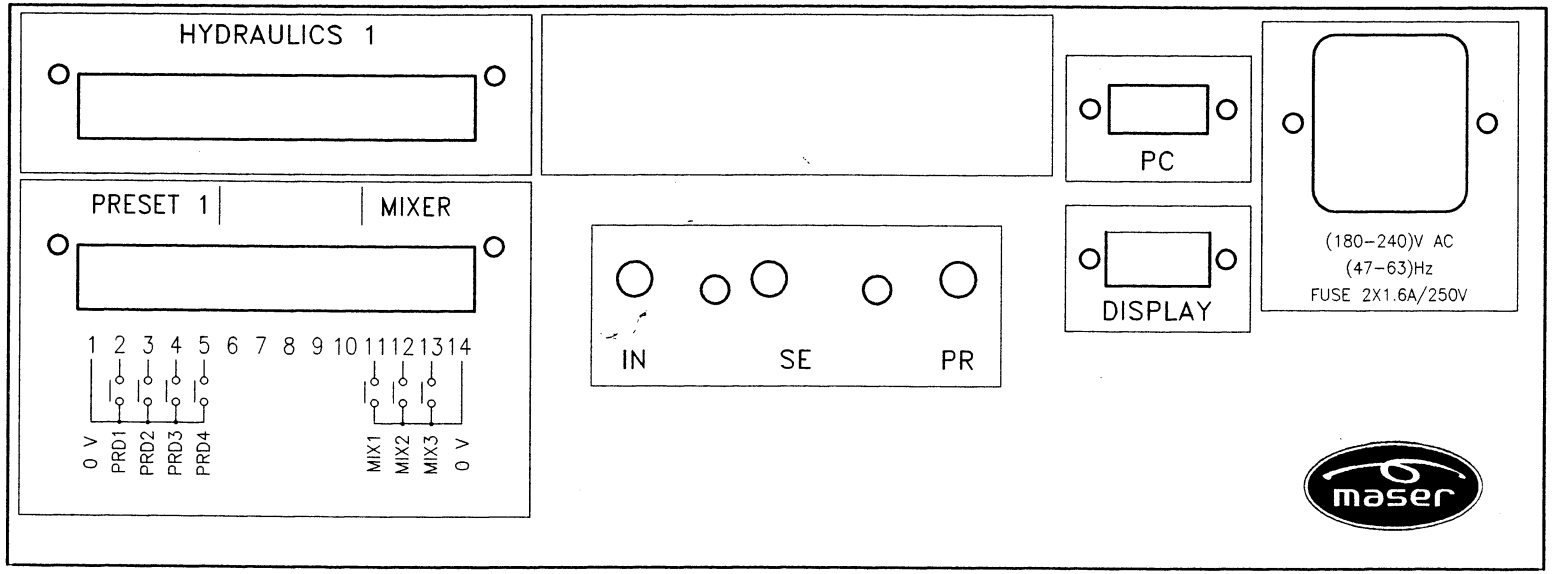

Ind. Rev.	N° OM	Descrizione	Data	Disegnatore
A	2442	Emissione	27/02/97	F.Giovagnoni
-		Aggironati cablaggi mix e serigrafia, eliminato foglio 3	26/11/01	A.Rivani

REVISIONI

SALVO DIVERSE INDICAZIONI TOLLERANZE GENERALI ISO 22768/1 ☐ Fine ☐ Media ☐ Grossolana ☐ Molto Grossolana

Materiale //

Trattamento //

	Firma	Data
Verifica	Cristiano Ulbe	26/11/01
Approvazione		26/11/01

Formato A3

Disegno N° M03268SB | Revisione A | Foglio 1 di 2 | Scala //

Titolo SCHEMA DI CONNESSIONE
TESTATA MTR-ST CON MISCELATORE
(CONNECTION DRAWING OF THE MTR-ST HEAD WITH MIXER)

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SOLUZIONI PER L'AUTOMAZIONE

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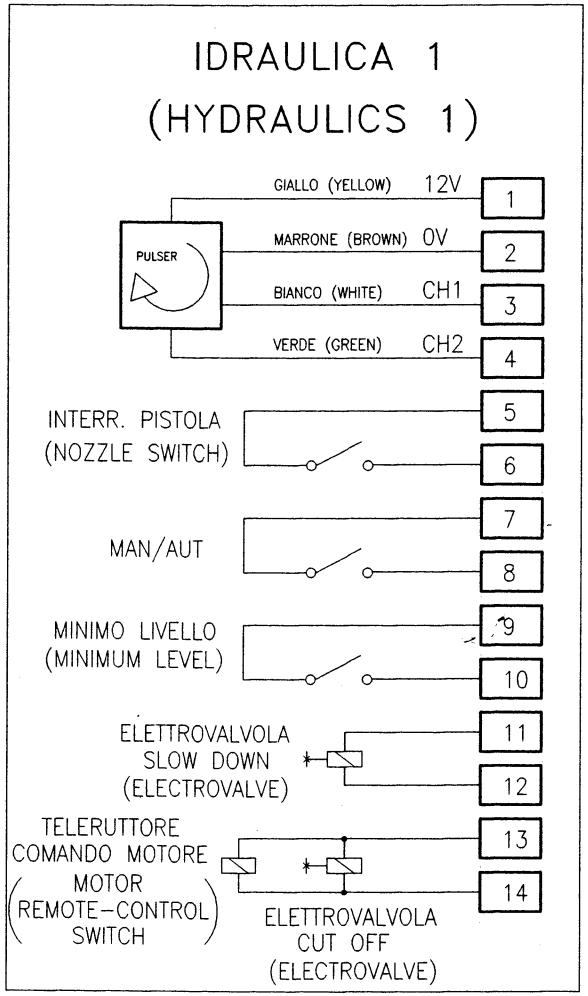

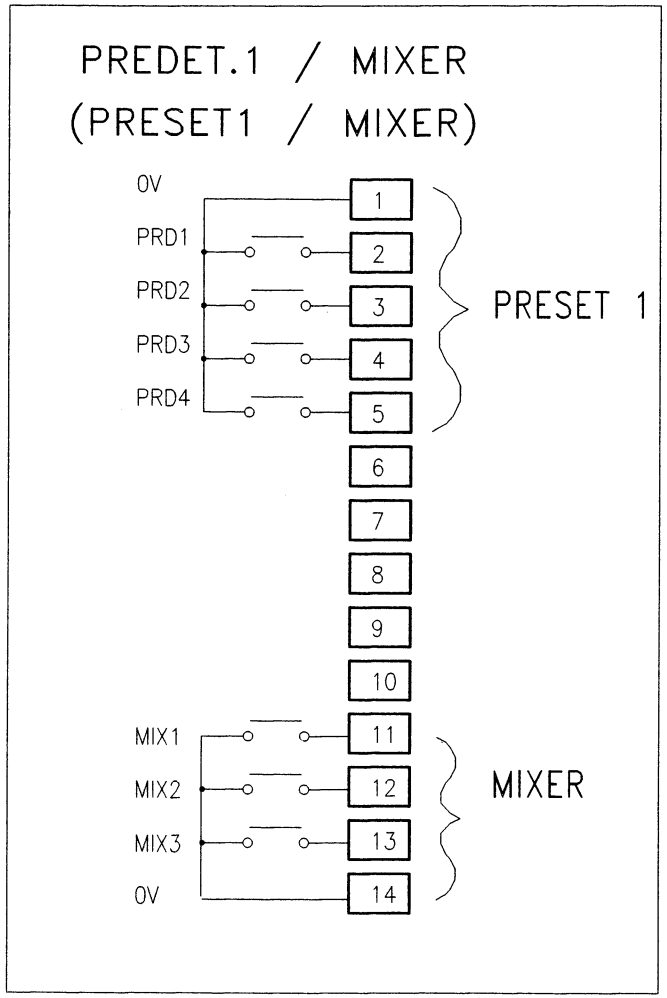

Disegno N°	M03268SB	Revisione	A	Foglio 2 di 2	Scala //

Titolo

SCHEMA DI CONNESSIONE
TESTATA MTR-ST CON MISCELATORE
(CONNECTION DRAWING OF THE MTR-ST HEAD WITH MIXER)

maser
SOLUZIONI PER L'AUTOMAZIONE

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STATO DI REVISIONE DEI FOGLI	Foglio	1	2	3	4	5	6	7	8	9	10
	Rev.	–	–								

Foglio 1 di 2	Assieme Superiore	Formato A2☐ A3☒ A4☐	SALVO DIVERSA INDICAZIONE	
		GESTIONE CONFIGURAZIONE	Le quote sono espresse in mm Le tolleranze sono espresse in micron	
Materiale		Revisione – / Visto / Data 27/2/97	ANGOLI	±1
Progetto P1080	Scala	Firma / Data	TOLLERANZE GENERALI: Grado di precisione MEDIO UNI 5307	
Disegno N° M03266ST		Diseg. 27/02/97 Appro. 27/2/97	Rugosità superficiale	✓

Titolo
SCHEMA COLLEGAMENTO MTR-ST / SCHEDA RECUPERO VAPORI
(Drawing of the connection of the vapour recovery board to the double MTR-ST)

Disegno di proprietà della
maser SOLUZIONI PER L'AUTOMAZIONE
che si riserva i diritti sanciti dalle leggi

REVISIONI

Ind. Rev.	N° OM	Descrizione	Data	Approvazione
–	–	Emissione	27/02/97	

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MODULO DI CONTROLLO "OPEN FRAME" CONFIG. DOPPIO

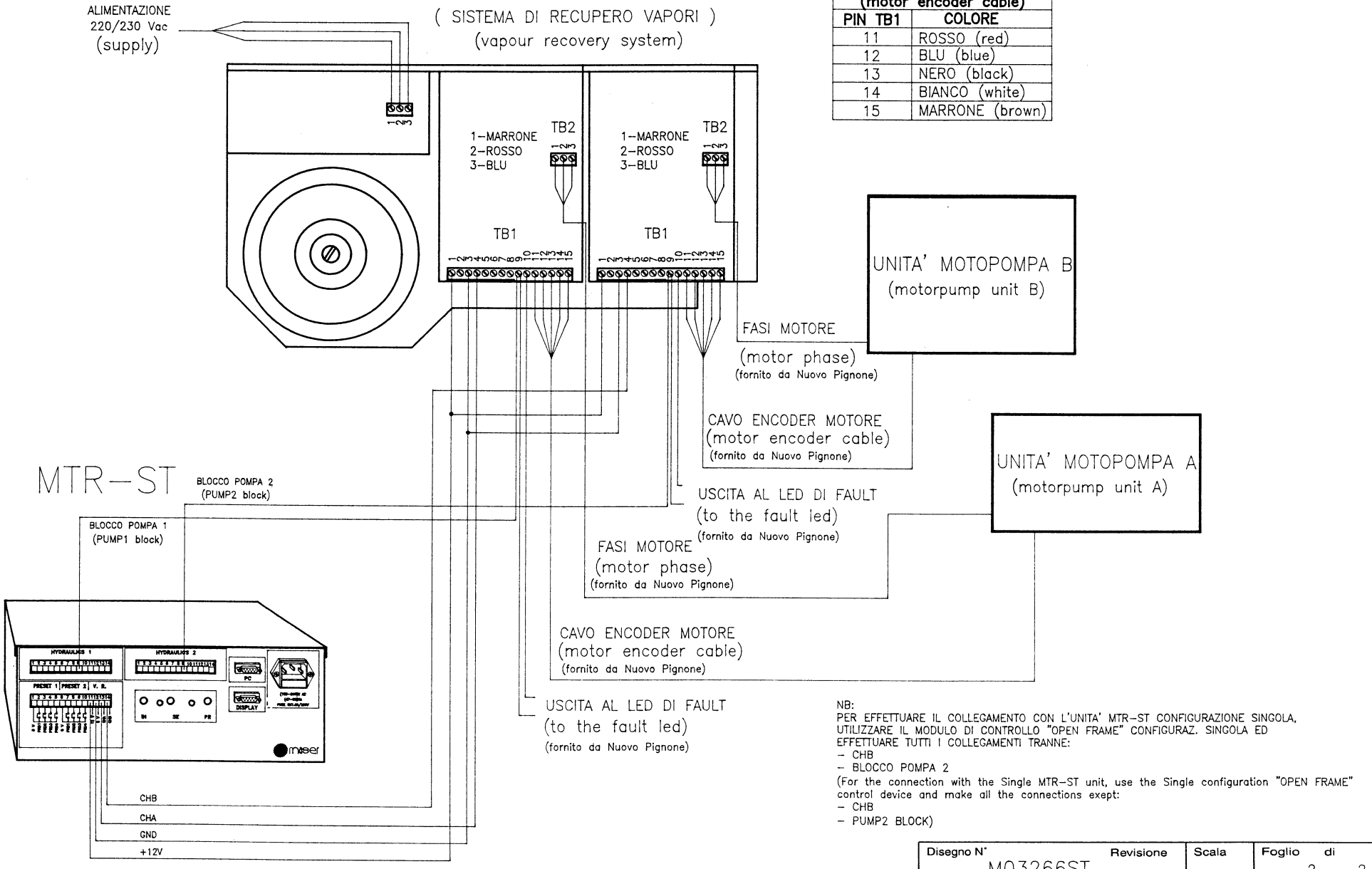
(Double configuration "OPEN FRAME" control device)

cod. NFB45902203X

(SISTEMA DI RECUPERO VAPORI)

(vapour recovery system)

CAVO ENCODER MOTORE (motor encoder cable)	
PIN TB1	COLORE
11	ROSSO (red)
12	BLU (blue)
13	NERO (black)
14	BIANCO (white)
15	MARRONE (brown)



NB:
PER EFFETTUARE IL COLLEGAMENTO CON L'UNITA' MTR-ST CONFIGURAZIONE SINGOLA, UTILIZZARE IL MODULO DI CONTROLLO "OPEN FRAME" CONFIGURAZ. SINGOLA ED EFFETTUARE TUTTI I COLLEGAMENTI TRANNE:
- CHB
- BLOCCO POMPA 2

(For the connection with the Single MTR-ST unit, use the Single configuration "OPEN FRAME" control device and make all the connections exept:
- CHB
- PUMP2 BLOCK)

Disegno N°	Revisione	Scala	Foglio	di
M03266ST	-		2	2

Titolo
SCHEMA COLLEGAMENTO
MTR-ST / SCHEDA RECUPERO VAPORI

Disegno di proprietà della
maser
SOLUZIONI PER L'AUTOMAZIONE
che si riserva i diritti sanciti dalle leggi

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STATO DI REVISIONE DEI FOGLI	Foglio	1	2	3	4	5	6	7	8	9	10	
	Rev.	A	A									

Foglio 1 di 2	Assieme Superiore	Formato A2☐ A3☒ A4☐		SALVO DIVERSA INDICAZIONE	
		GESTIONE CONFIGURAZIONE		Le quote sono espresse in mm Le tolleranze sono espresse in micron	
Materiale		Revisione A	Visto	Data 4/2/99	ANGOLI ±1
Progetto P1080	Scala	Diseg.	Firma	Data 11/2/99	TOLLERANZE GENERALI: Grado di tolleranza MEDIA UNI ISO 2768
Disegno N° M03267ST		Appro.			Rugosita' superficiale ✓

Titolo

SCHEMA DI COLLEGAMENTO MAN/AUT TESTATE MTR-ST

(MTR-ST HEAD MAN/AUT CONNECTION DRAWING)

maser SOLUZIONI PER L'AUTOMAZIONE

REVISIONI

Ind. Rev.	N° OM	Descrizione	Data	Approvazione
A	2057	Aggiunta nota e sezione cavi	11/02/99	
–	–	Emissione	27/02/97	Mauro Tedeschi

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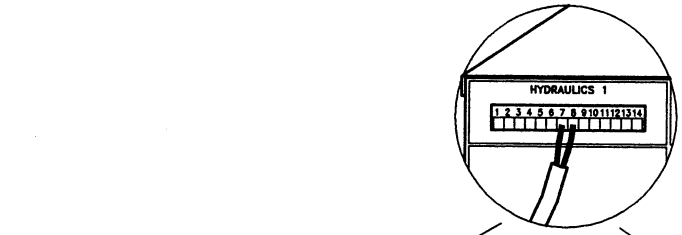
QUADRO ELETTRICO GENERALE

(GENERAL ELECTRIC BOARD)

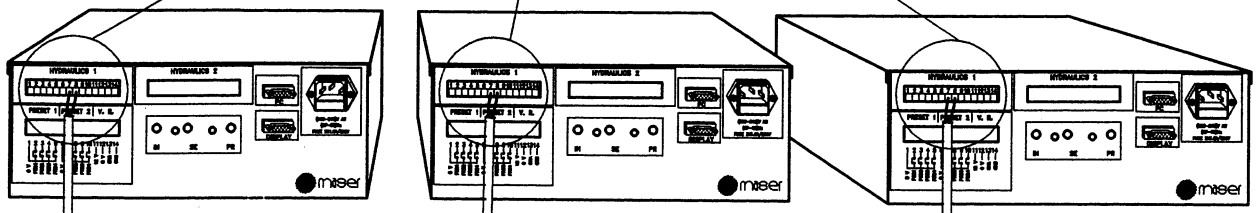
INTERR. MAN/AUT < aperto ⇒ funzionamento automatico
chiuso ⇒ funzionamento manuale

MAN/AUT SWITCH < open ⇒ automatic operation
closed ⇒ manual operation

MAN/AUT n MAN/AUT 2 MAN/AUT 1



MTR–ST 1 MTR–ST 2 MTR–ST n



CAVI A 2 POLI SCHERMATI 2X0,35

(2 WIRES SHIELDED CABLES 2X0,35)

TUTTI I CAVI SONO ANTIFIAMMA A NORME CEI 20–22

(All cables are flame–proof according to CEI 20–22)

UTILIZZARE CANALIZZAZIONI SEPARATE DALLA LINEA DI ALTA TENSIONE PER I CAVI DI SEGNALE (linee seriali e MAN/AUT)

(Use different channels from the high voltage line for the signal line : serial cables and MAN/AUT)

Disegno N° M03267ST A	Scala	Foglio 2	di 2
Titolo: SCHEMA DI COLLEGAMENTO MAN/AUT TESTATA MTR–ST	maser SOLUZIONI PER L'AUTOMAZIONE		

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STATO DI REVISIONE DEI FOGLI	Foglio	1	2	3	4	5	6	7	8	9	10	
	Rev.	_	_	_								

Foglio 1 di 3	Assieme Superiore	Formato A2☐ A3☒ A4☐		SALVO DIVERSA INDICAZIONE
		GESTIONE CONFIGURAZIONE		Le quote sono espresse in mm Le tolleranze sono espresse in micron
Materiale		Revisione _	Visto Data 9/1/97	ANGOLI ±1
Progetto P1080	Scala	Firma Data		TOLLERANZE GENERALI: Grado di precisione MEDIO UNI 5307
Disegno N° M03245ST		Diseg. F. Giovannini 09/01/97 Appro. Marcello Milesi 9/1/97		Rugosità superficiale ✓

Titolo

SCHEMA DI COLLEGAMENTO TESTATE MTR/ST – PC
MEDIANTE INTERFACCIA MSA 232–485
(Diagram of connection between MTR/ST HEADS and PC by MSA INTERFACE (RS232–RS485))

Disegno di proprietà della
maser SOLUZIONI PER L'AUTOMAZIONE
che si riserva i diritti sanciti dalle leggi

REVISIONI

Ind. Rev.	N° OM	Descrizione	Data	Approvazione
_	_	Emissione	09/01/97	

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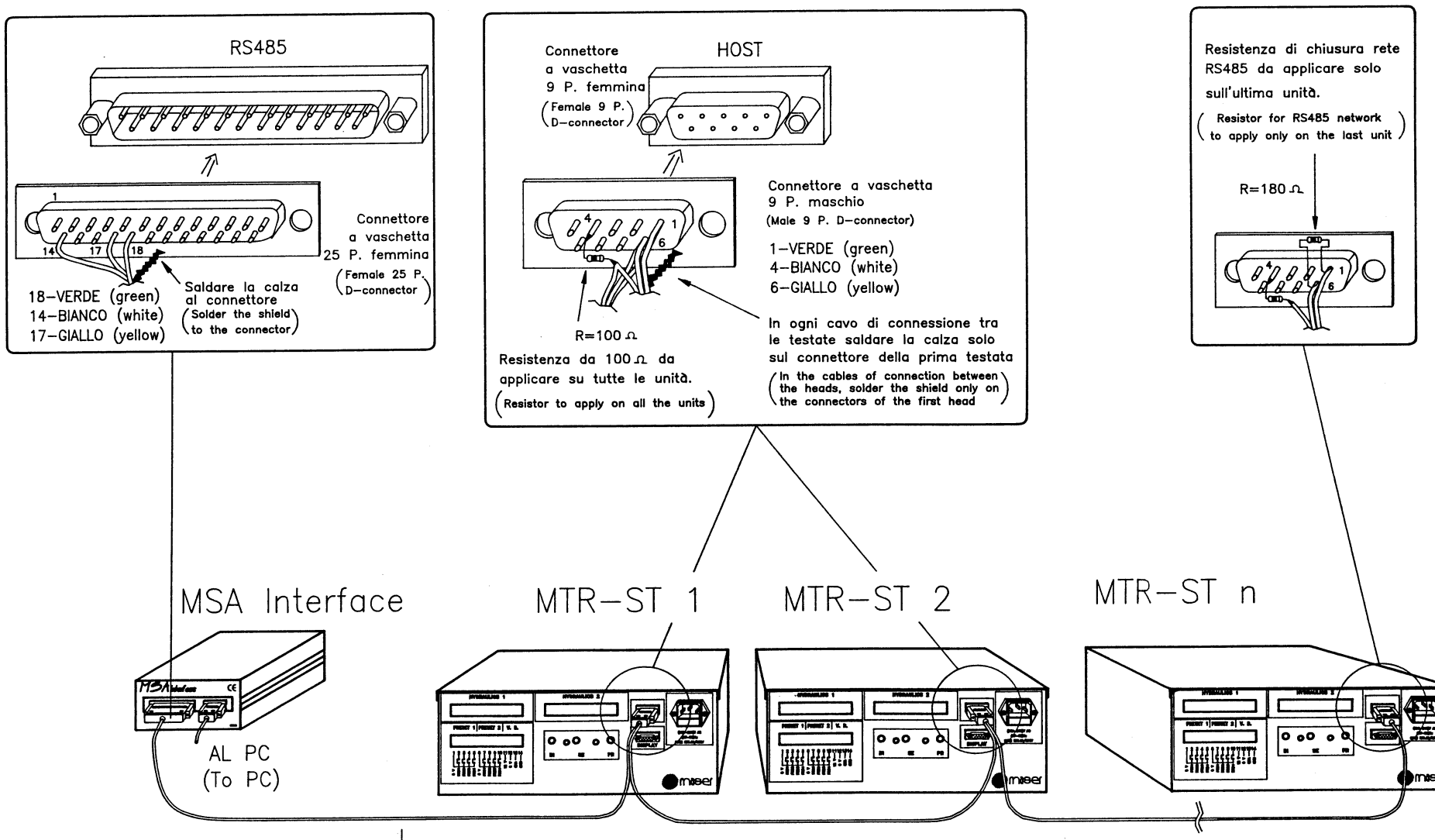
RS485
1
14
17
18
18–VERDE (green)
14–BIANCO (white)
17–GIALLO (yellow)
Saldare la calza al connettore
(Solder the shield to the connector)
Connettore a vaschetta 25 P. femmina
(Female 25 P. D–connector)
Connettore a vaschetta 9 P. femmina
(Female 9 P. D–connector)
HOST
4
1
6
R=100 Ω
Resistenza da 100 Ω da applicare su tutte le unità.
(Resistor to apply on all the units)
Connettore a vaschetta 9 P. maschio
(Male 9 P. D–connector)
1–VERDE (green)
4–BIANCO (white)
6–GIALLO (yellow)
In ogni cavo di connessione tra le testate saldare la calza solo sul connettore della prima testata
(In the cables of connection between the heads, solder the shield only on the connectors of the first head)
Resistenza di chiusura rete RS485 da applicare solo sull'ultima unità.
(Resistor for RS485 network to apply only on the last unit)
R=180 Ω
MSA Interface
AL PC
(To PC)
MTR–ST 1
MTR–ST 2
MTR–ST n
CAVO A 4 POLI SCHERMATO TWISTATO
(4 WIRES TWISTED AND SHIELDED CABLE)

Disegno N° M03245ST	Revisione –	Scala	Foglio 2 di 3
Titolo SCHEMA DI COLLEGAMENTO TESTATA MTR/ST – PC MEDIANTE INTERF. MSA RS232–RS485		Disegno di proprietà della maser SOLUZIONI PER L'AUTOMAZIONE	

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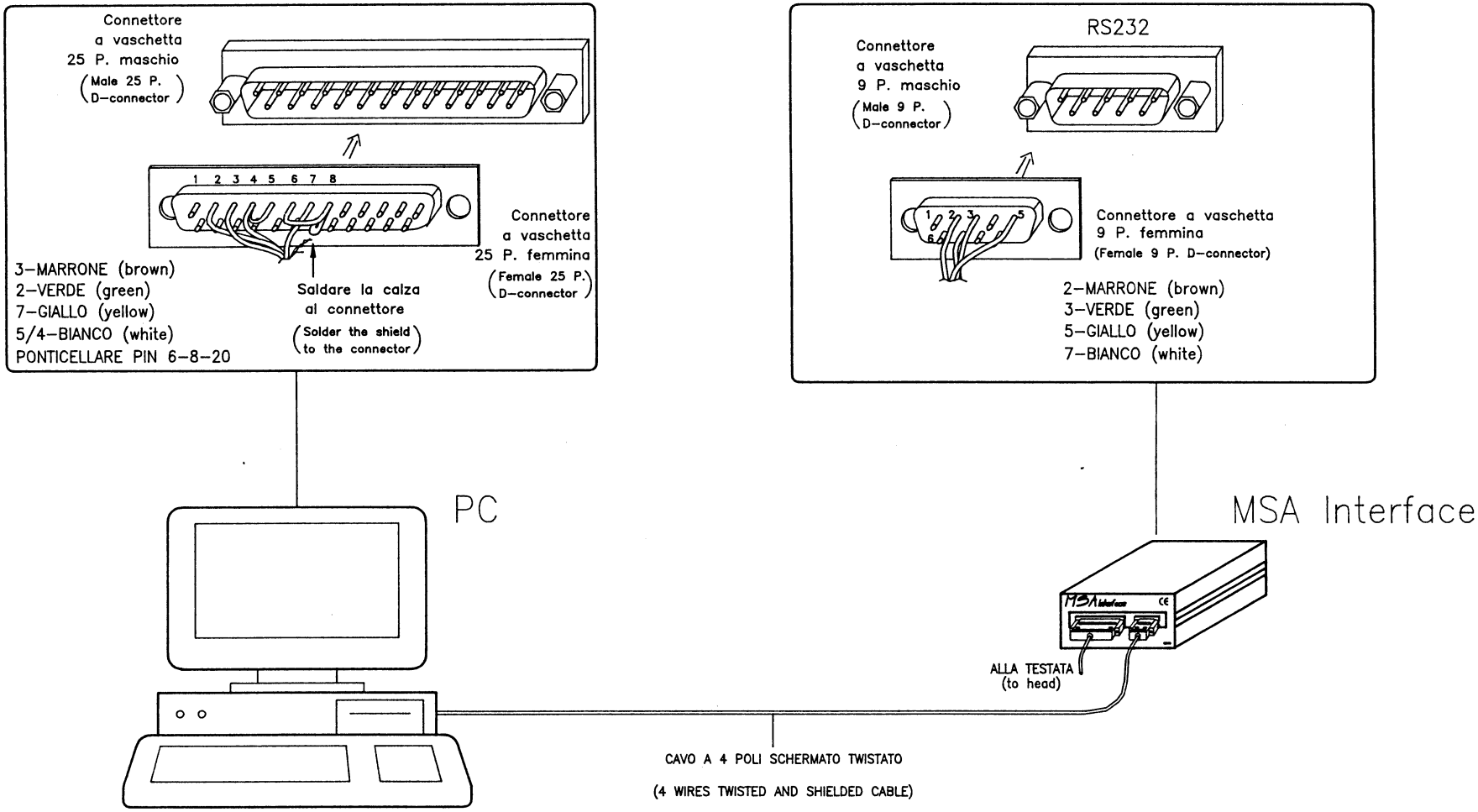

Disegno N° M03245ST	Revisione –	Scala	Foglio 3 di 3
Titolo SCHEMA DI COLLEGAMENTO TESTATA MTR-ST / PC MEDIANTE INTERF. MSA RS232-RS485		Disegno di proprietà della maser SOLUZIONI PER L'AUTOMAZIONE	

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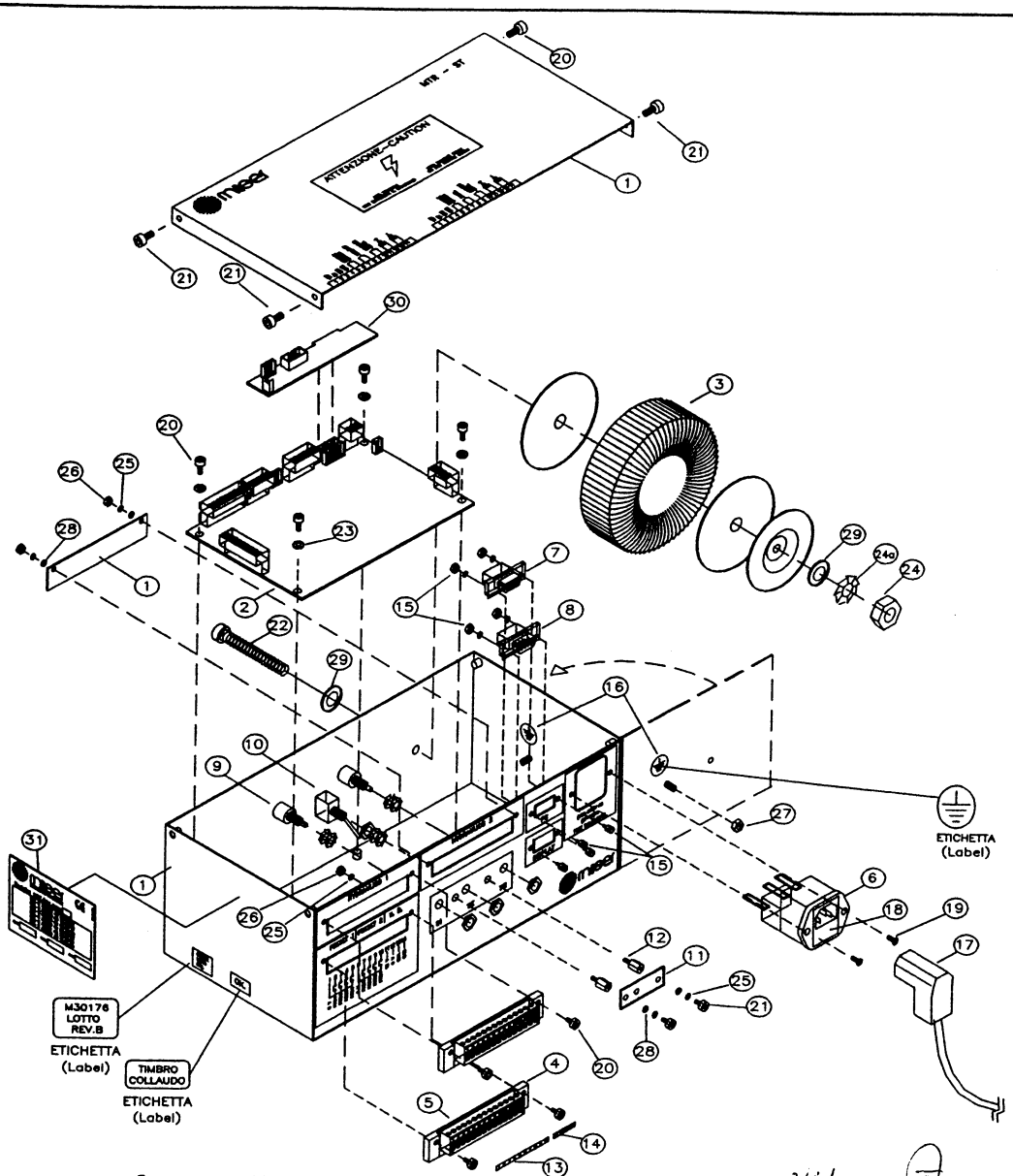

POS	CODICE	DESCRIZIONE	Q.tà/Lungh.
1	M13227	CONTENITORE MTR-ST	1
2	M20569	SCHEDA MTR-CPU SINGOLA SERIALE	1
3	M12168	TRASFORMATORE MTR-01	1
4	M12587	MORSETTO PHOENIX 14 P.M.	2
5	M12449	MORSETTO PHOENIX 14 P.F.	2
6	M13681	PRESA ALIMENTAZIONE P X 630 OMEGA	1
7	M10949	CONNETTORE A VASCHETTA 9 P.F	1
8	M11278	CONNETTORE A VASCHETTA 9 P.M - P.I.	1
9	M11171	PULSANTE JAPAN NORM.APERTO ROSSO 85123 OMEGA	2
10	M10458	INTERR. 2 POS. BIGICON DEVIATORE UNIP.DEN/123 CK	1
11	M11917	PIASTRINA PER TASTO SIM/ERR	1
12	M10155	DISTANZIALE 3X5 MF	2
13	M12213	ETICHETTA 1-10 MORSETTI PHOENIX	3
14	M12214	ETICHETTA 11-20 MORSETTI PHOENIX	3
15	M10958	KIT BLOCCO A VITE	2
16	M11529	TERRA ø 15	2
17	M10878	CAVO CON PRESA VDE 90° 2m	1
18	M12233	FUSIBILE 5X20 1.6A RITARDATO	2
19	M11776	VITE M3X8 TESTA SVASATA ZINCATA	2
20	M11777	VITE M3X6 BRUGOLA ZINCATA	11
21	M12226	VITE M3X6 BRUGOLA ZINCATA FORATA	5
22	M10779	VITE M6X35 BRUGOLA ZINCATA	1
23	M12303	RONDELLA ø3 PVC	4
24	M10781	DADO ø6 ZINCATO	1
24a	M10784	RONDELLA DENTELLATA ø6 ZINCATA	1
25	M10782	RONDELLA DENTELLATA ø3 ZINCATA	10
26	M10134	DADO ø3	8
27	M11484	DADO ø4 OTTONE	1
28	M10562	RONDELLA PIANA ø3 ZINCATA	4
29	M10787	RONDELLA PIANA ø6 ZINCATA	2
30	M20518	SCHEDA INT-MTR R.V. PER MTR-ST	1
31	M11640	TARGHETTA MATRICOLA MTE	1

REVISIONI

Ind. Rev.	N° OM	Descrizione	Data	Approvazione
F	2286	Cambiata descrizione titolo	8/6/00	
E	2173	Aggiunto conn. M6 e aggiornata lista p.	26/08/99	Tedeschi Mauro
D	2147	Aggiornato lista parti	01/07/99	Tedeschi Mauro
C	2043	Aggiornato disegno	23/12/98	Tedeschi Mauro
B	1937	Sostituito filtro rete con presa PX630 OMEGA, aggiunto filtro rete ARCOTRONICS e varistore VDR 24V tra fase e neutro; inserita induttanza VK200.	05/03/98	Tedeschi Mauro
A	1917	Modificato fissaggio trasformatore,inserita targhetta, Corretto flat tra M5 e CN14, modificata viteria e aggiunti connettori mancanti.	20/01/98	Tedeschi Mauro
-	-	Modificate indicazioni per collegamento R.V. Emissione	05/12/96	Tedeschi Mauro

STATO DI REVISIONE DEI FOGLI	Foglio	1	2	3	4	5	6	7	8	9	10
	Rev.	F	F								

Foglio 1 di 2 — Assieme Superiore

Formato A2☐ A3☒ A4☐

GESTIONE CONFIGURAZIONE

Materiale

Revisione F — Vista — Data 22/06/00

Progetto P1080 — Scala

Firma — Data

Diseg. A. Rivani 08/06/00

Disegno N° M30176DI

Appro. 8/6/00

Titolo

DISEGNO D'ASSIEME UNITA' MTR-ST SINGOLA VR E PC
(MTR-ST Single Unit VR and PC Assembly Drawing)

SALVO DIVERSA INDICAZIONE

Le quote sono espresse in mm
Le tolleranze sono espresse in micron

ANGOLI ±1

TOLLERANZE GENERALI:
Grado di tolleranza MEDIA UNI ISO 2768

Rugosita' superficiale ✓

maser
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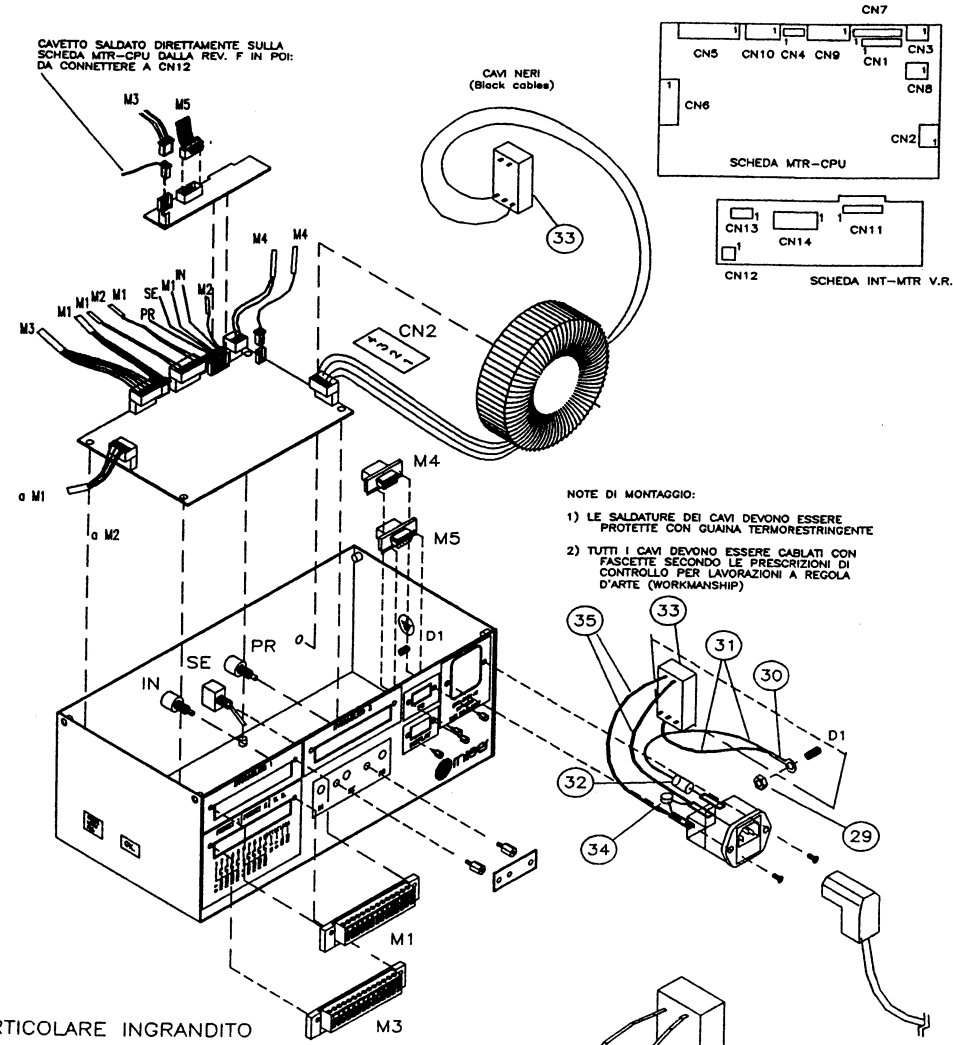


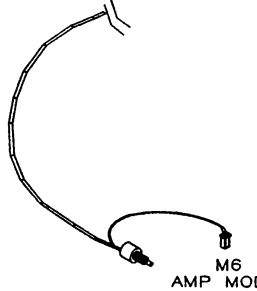
NOTE DI MONTAGGIO:

1) LE SALDATURE DEI CAVI DEVONO ESSERE PROTETTE CON GUAINA TERMORESTRINGENTE

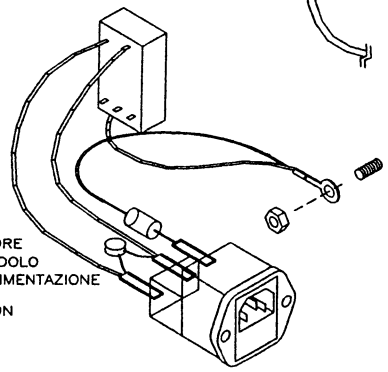
2) TUTTI I CAVI DEVONO ESSERE CABLATI CON FASCETTE SECONDO LE PRESCRIZIONI DI CONTROLLO PER LAVORAZIONI A REGOLA D'ARTE (WORKMANSHIP)

PARTICOLARE INGRANDITO

1) FISSARE M6 AI CABLAGGI CON FASCETTA



PARTICOLARE INGRANDITO
COLLEGAMENTO FILTRO

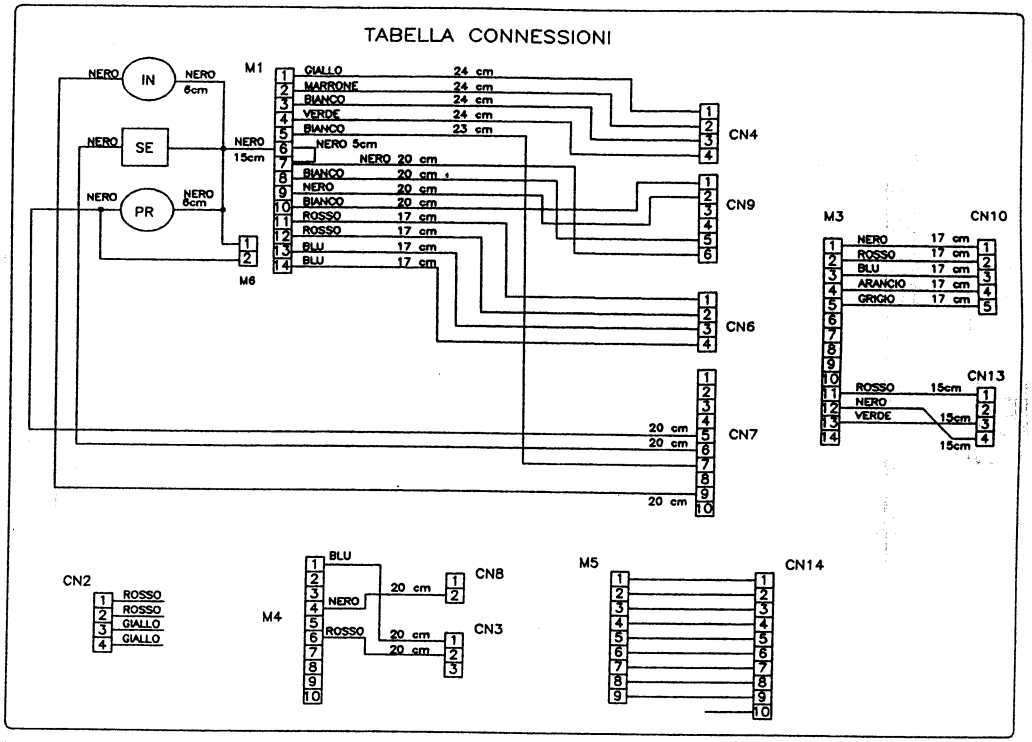


NOTE DI MONTAGGIO:

1) FISSARE IL FILTRO AL CONTENITORE MEDIANTE BIADESIVO POSIZIONANDOLO A FIANCO O SOTTO LA PRESA ALIMENTAZIONE

2) PROTEGGERE LE SALDATURE CON GUAINA TERMORESTRINGENTE

TABELLA CONNESSIONI



POS	CODICE	DESCRIZIONE	Qt./Lungh.	POS	CODICE	DESCRIZIONE	Qt./Lungh.
29	M11484	DADO ø4 OTTONE	1	–	M11704	CAVO UNIPOLARE AWG22 GIALLO	vedi tabella
30	M11675	CAPOCORDA 6 mm	1	–	M11703	CAVO UNIPOLARE AWG22 MARRONE	vedi tabella
31	M11691	CAVO UNIP. 1X1 TERRA	2 X 0,15m	–	M11696	CAVO UNIPOLARE AWG22 BIANCO	vedi tabella
32	M10451	INDUTTANZA VK200	1	–	M11699	CAVO UNIPOLARE AWG22 VERDE	vedi tabella
33	M10177	FILTRO RETE C.S. FAHAV3100ZE	1	–	M11695	CAVO UNIPOLARE AWG22 NERO	vedi tabella
34	M11122	VDR 245 V-GEMOV	1	–	M11694	CAVO UNIPOLARE AWG22 ROSSO	vedi tabella
35	M11695	CAVO UNIP. AWG22 NERO	2 X 15 cm	–	M11701	CAVO UNIPOLARE AWG22 BLU	vedi tabella
–	M11896	PUNTALE AI3 ARANCIO	15	–	M11702	CAVO UNIPOLARE AWG22 ARANCIO	vedi tabella
–	M12163	PUNTALE AI GIALLO	4	–	M11700	CAVO UNIPOLARE AWG22 GRIGIO	vedi tabella
–	M12209	CONNETTORE AMP MODU II 10P.F.	1	–	M11247	CAVO FLAT 10 POLI	20cm
–	M12208	CONNETTORE AMP MODU II 4P.F.	2	–	M12705	CONN. AMP. MODU2	1
–	M11185	CONNETTORE P.I. 10P.F.	1	–	M12370	CONN. AMP. MODU 2PM	1
–	M12077	CONTATTO PER AMP MODU2	14				

Disegno N°	Scala	Foglio	di
M30176DI F		2	2

Titolo

DISEGNO D'ASSIEME UNITA'
MTR-ST SINGOLA VR E PC

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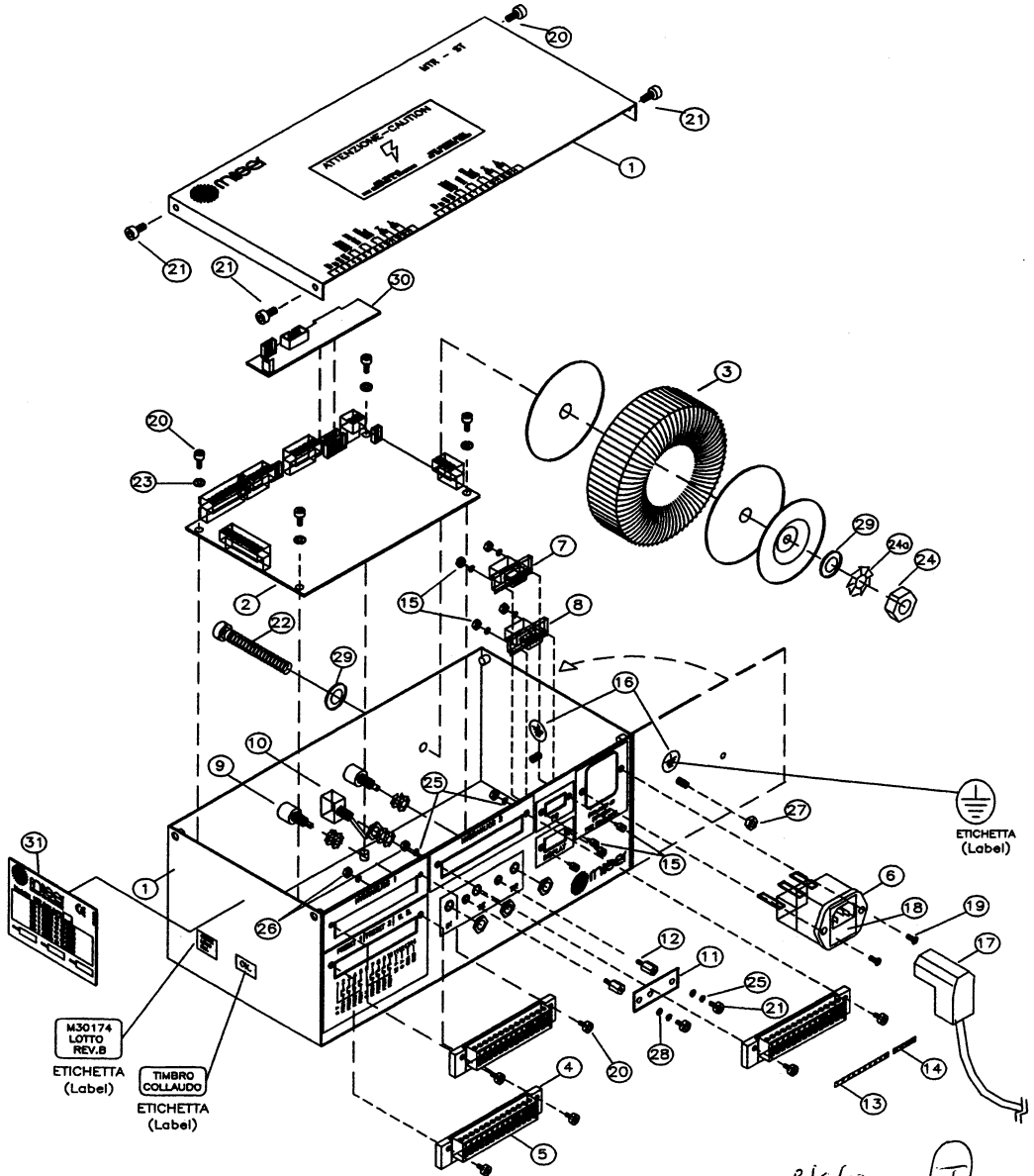

POS	CODICE	DESCRIZIONE	Qt./Lungh.
1	M13227	CONTENITORE MTR-ST	1
2	M20179	SCHEDA MTR-CPU DOPPIA SERIALE	1
3	M12168	TRASFORMATORE MTR-01	1
4	M12587	MORSETTO PHOENIX 14 P.M.	3
5	M12449	MORSETTO PHOENIX 14 P.F.	3
6	M13681	PRESA ALIMENTAZIONE P X 630 OMEGA	1
7	M10949	CONNETTORE A VASCHETTA 9 P.F	1
8	M11278	CONNETTORE A VASCHETTA 9 P.M - P.L	1
9	M11171	PULSANTE JAPAN NORM.APERTO ROSSO BS123 OMEGA	2
10	M10458	INTERR. 2 POS. BIOCCHI DEVIATORE UNIP.DEV/123 CH	1
11	M11917	PIASTRINA PER TASTO SIM/ERR	1
12	M10155	DISTANZIALE 3X5 MF	2
13	M12213	ETICHETTA 1-10 MORSETTI PHOENIX	3
14	M12214	ETICHETTA 11-20 MORSETTI PHOENIX	3
15	M10958	KIT BLOCCO A VITE	2
16	M11529	TERRA ø 15	2
17	M10678	CAVO CON PRESA VDE 90° 2m	1
18	M12233	FUSIBILE 5X20 1,6A RITARDATO	2
19	M11776	VITE M3X8 TESTA SVASATA ZINCATA	2
20	M11777	VITE M3X6 BRUGOLA ZINCATA	11
21	M12226	VITE M3X6 BRUGOLA ZINCATA FORATA	5
22	M10779	VITE M6X35 BRUGOLA ZINCATA	1
23	M12303	RONDELLA ø3 PVC	4
24	M10781	DADO ø8 ZINCATO	1
24a	M10784	RONDELLA DENTELLATA ø8 ZINCATA	1
25	M10782	RONDELLA DENTELLATA ø3 ZINCATA	10
26	M10134	DADO ø3	8
27	M11484	DADO ø4 OTTONE	1
28	M10562	RONDELLA PIANA ø3 ZINCATA	2
29	M10787	RONDELLA PIANA ø8 ZINCATA	2
30	M20518	SCHEDA INT-MTR V.R. PER MTR-ST	1
31	M11640	TARGHETTA MATRICOLA MTE	1

Ind. Rev.	N° OM	Descrizione	Data	Approvazione
F	2286	Cambiata descrizione titolo	8/6/00	Tedeschi Mauro
E	2173	Aggiunto conn. M6 e aggiornata lista p.	26/08/99	Tedeschi Mauro
D	2147	Aggiornata lista parti	01/07/99	Tedeschi Mauro
C	2042	Aggiornato disegno	23/12/98	Tedeschi Mauro
B	1937	Sostituito filtro rete con presa PX630 OMEGA, aggiunto filtro rete ARCOTRONICS e varistore VDR 24V tra fase e neutro; inserita induttanza VK200.	05/03/98	Tedeschi Mauro
A	1917	Modificato fissaggio trasformatore,inserita targhetta, Corretto flat tra M5 e CN14, modificata viteria e aggiunti connettori mancanti.	20/01/98	Tedeschi Mauro
–	–	Modificate indicazioni per collegamento R.V. Emissione	05/12/96	Tedeschi Mauro

REVISIONI

STATO DI REVISIONE DEI FOGLI	Foglio	1	2	3	4	5	6	7	8	9	10
	Rev.	F	F								

Foglio 1 di 2 | Assieme Superiore | Formato A2☐ A3☒ A4☐ | SALVO DIVERSA INDICAZIONE

GESTIONE CONFIGURAZIONE | Le quote sono espresse in mm
Le tolleranze sono espresse in micron

Materiale | Revisione F | Visto | Data 8/06/00 | ANGOLI ±1

Progetto P1080 | Scala | TOLLERANZE GENERALI: Grado di tolleranza MEDIA UNI ISO 2768

Firma Data
Diseg. A. Rivani 08/06/00
Appro. 8/6/00

Disegno N° M30174DI | Rugosita' superficiale √

Titolo

DISEGNO D'ASSIEME UNITA' MTR-ST DOPPIA VR E PC
(MTR-ST Double Unit VR and PC Assembly Drawing)

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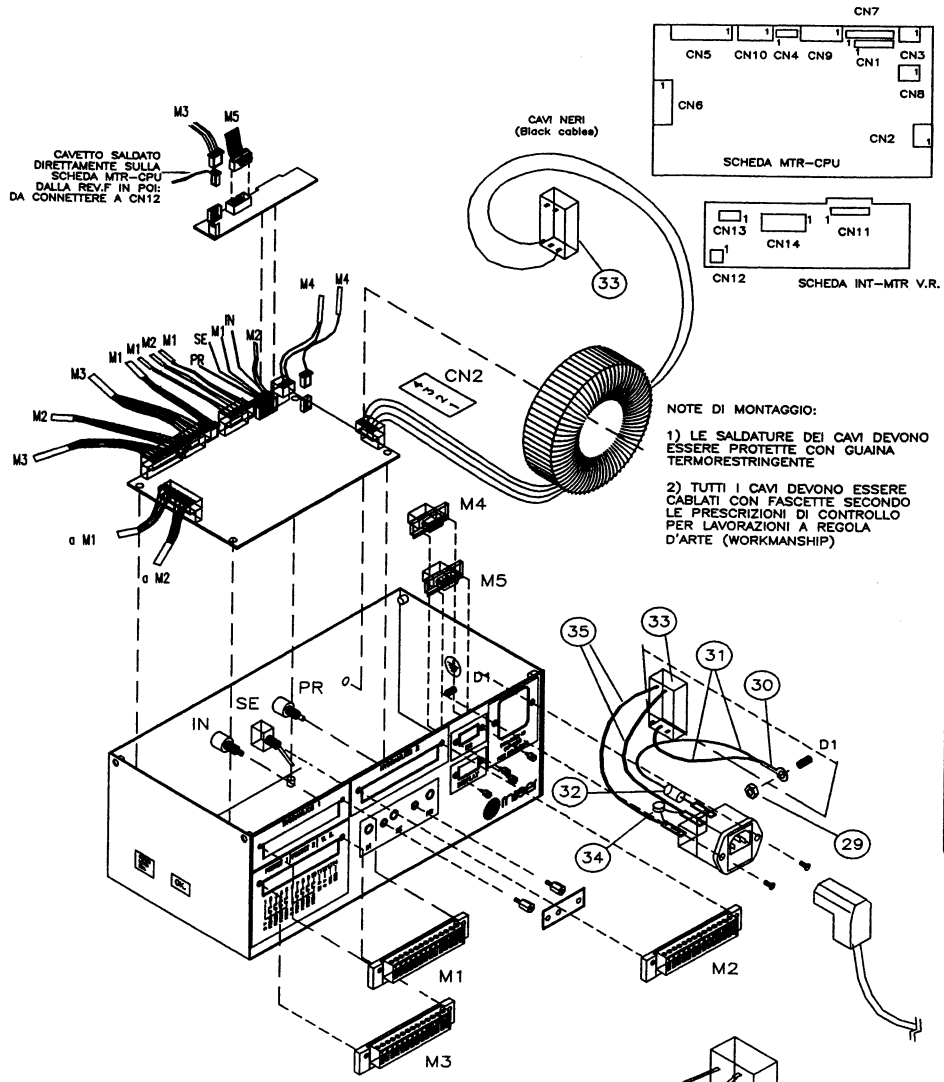
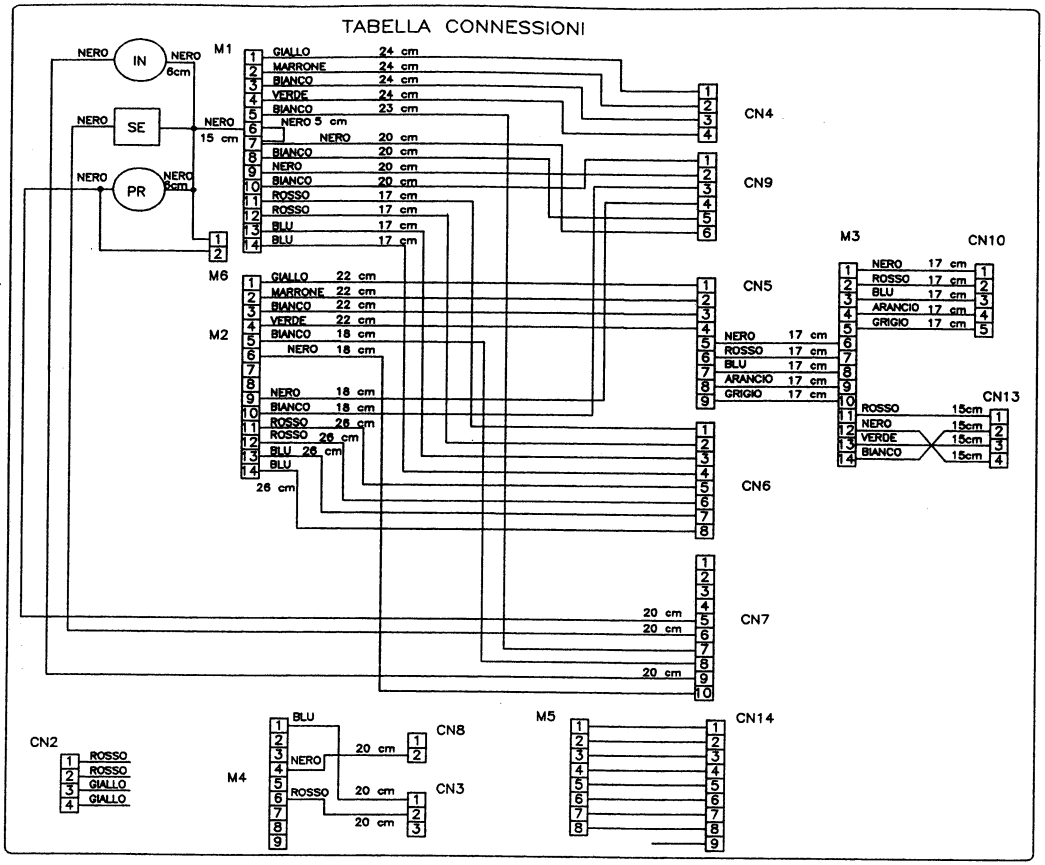


NOTE DI MONTAGGIO:

1) LE SALDATURE DEI CAVI DEVONO ESSERE PROTETTE CON GUAINA TERMORESTRINGENTE

2) TUTTI I CAVI DEVONO ESSERE CABLATI CON FASCETTE SECONDO LE PRESCRIZIONI DI CONTROLLO PER LAVORAZIONI A REGOLA D'ARTE (WORKMANSHIP)

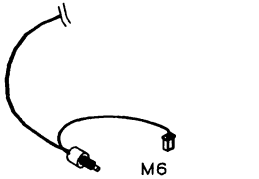
TABELLA CONNESSIONI



POS	CODICE	DESCRIZIONE	Qt./Lungh.	POS	CODICE	DESCRIZIONE	Qt./Lungh.
29	M11484	DADO ø4 OTTONE	1	–	M11704	CAVO UNIPOLARE AWG22 GIALLO	vedi tabella
30	M11675	CAPOCORDA 6 mm	1	–	M11703	CAVO UNIPOLARE AWG22 MARRONE	vedi tabella
31	M11691	CAVO UNIP. 1X1 TERRA	2 X 15cm	–	M11696	CAVO UNIPOLARE AWG22 BIANCO	vedi tabella
32	M10451	INDUTTANZA VK200	1	–	M11699	CAVO UNIPOLARE AWG22 VERDE	vedi tabella
33	M10177	FILTRO RETE C.S. FAHAV3100ZE	1	–	M11695	CAVO UNIPOLARE AWG22 NERO	vedi tabella
34	M11122	VDR 245 V-GEMOV	1	–	M11694	CAVO UNIPOLARE AWG22 ROSSO	vedi tabella
35	M11695	CAVO UNIP. AWG22 NERO	2 X 15 cm	–	M11701	CAVO UNIPOLARE AWG22 BLU	vedi tabella
–	M11896	PUNTALE AI3 ARANCIO	30	–	M11702	CAVO UNIPOLARE AWG22 ARANCIO	vedi tabella
–	M12163	PUNTALE AI GIALLO	4	–	M11700	CAVO UNIPOLARE AWG22 GRIGIO	vedi tabella
–	M12209	CONNETTORE AMP MODU II 10P.F.	1	–	M11247	CAVO FLAT 10 POLI	20cm
–	M12208	CONNETTORE AMP MODU II 4P.F.	2	–	M12705	CONNETTORE AMP. MODU 2PF	1
–	M11185	CONNETTORE P.I. 10P.F.	1	–	M12370	CONNETTORE AMP. MODU 2PM	1
–	M12077	CONTATTO AMP MODU2	16				

PARTICOLARE INGRANDITO

1) FISSARE M6 AI CABLAGGI CON FASCETTA

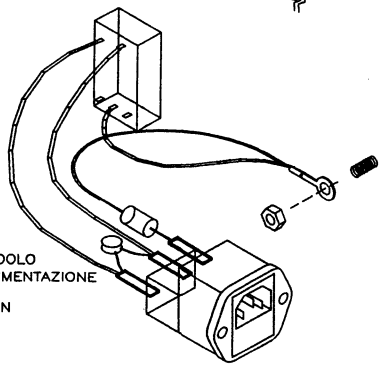


PARTICOLARE INGRANDITO
COLLEGAMENTO FILTRO

NOTE DI MONTAGGIO:

MEDIANTE BIADESIVO POSIZIONANDOLO A FIANCO O SOTTO LA PRESA ALIMENTAZIONE

2) PROTEGGERE LE SALDATURE CON GUAINA TERMORESTRINGENTE



Disegno N°	F	Scala	Foglio	di
M30174DI			2	2

Titolo

DISEGNO D'ASSIEME UNITA'
MTR-ST DOPPIA VR E PC

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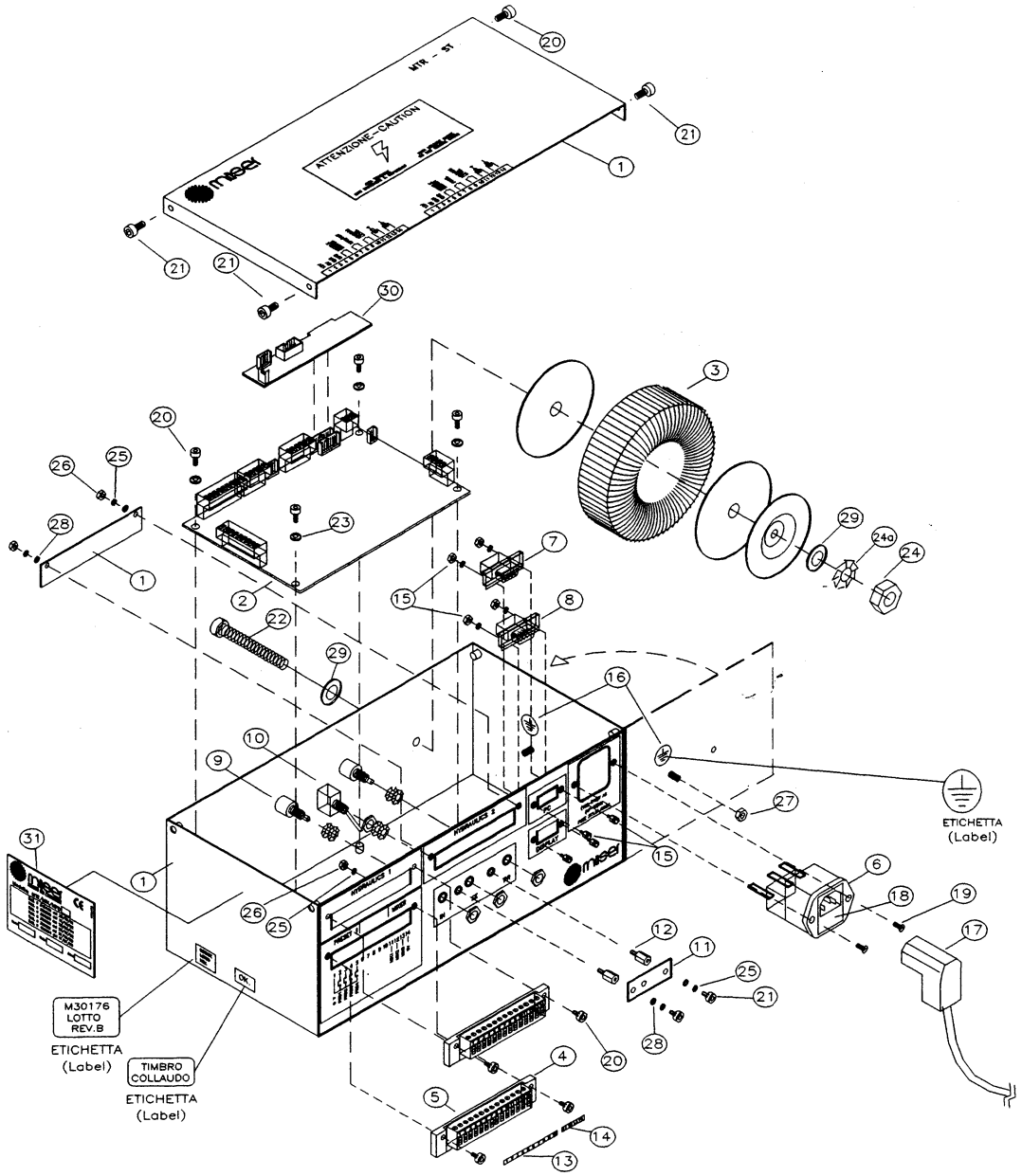

POS	CODICE	DESCRIZIONE	Qt./Lungh.
1	M13227	CONTENITORE MTR-ST	1
2	M20569	SCHEDA MTR-CPU SINGOLA SERIALE	1
3	M12168	TRASFORMATORE MTR-01	1
4	M12587	MORSETTO PHOENIX 14 P.M.	2
5	M12449	MORSETTO PHOENIX 14 P.F.	2
6	M13681	PRESA ALIMENTAZIONE P X 630 OMEGA	1
7	M10949	CONNETTORE A VASCHETTA 9 P.F	1
8	M11278	CONNETTORE A VASCHETTA 9 P.M - P.I.	1
9	M11171	PULSANTE JAPAN NORM.APERTO ROSSO BS123 OMEGA	2
10	M10458	INTERR. 2 POS. BIGICOM DEVIATORE UNIP.DEM/123 CK	1
11	M11917	PIASTRINA PER TASTO SIM/ERR	1
12	M10155	DISTANZIALE 3X5 MF	2
13	M12213	ETICHETTA 1-10 MORSETTI PHOENIX	3
14	M12214	ETICHETTA 11-20 MORSETTI PHOENIX	3
15	M10958	KIT BLOCCO A VITE	2
16	M11529	TERRA ø 15	2
17	M10878	CAVO CON PRESA VDE 90° 2m	1
18	M12233	FUSIBILE 5X20 1,6A RITARDATO	2
19	M11776	VITE M3X8 TESTA SVASATA ZINCATA	2
20	M11777	VITE M3X6 BRUGOLA ZINCATA	11
21	M12226	VITE M3X6 BRUGOLA ZINCATA FORATA	5
22	M10779	VITE M6X35 BRUGOLA ZINCATA	1
23	M12303	RONDELLA ø3 PVC	4
24	M10781	DADO ø6 ZINCATO	1
24a	M10784	RONDELLA DENTELLATA ø6 ZINCATA	1
25	M10782	RONDELLA DENTELLATA ø3 ZINCATA	10
26	M10134	DADO ø3	8
27	M11484	DADO ø4 OTTONE	1
28	M10562	RONDELLA PIANA ø3 ZINCATA	4
29	M10787	RONDELLA PIANA ø6 ZINCATA	2
30	M20518	SCHEDA INT-MTR R.V. PER MTR-ST	1
31	M11640	TARGHETTA MATRICOLA MTE	1

Ind. Rev.	N° OM	Descrizione	Data	Disegnatore
		Emissione	20/11/01	A.Rivani

REVISIONI

SALVO DIVERSE INDICAZIONI TOLLERANZE GENERALI ISO 22768/1 ☐ Fine ☐ Media ☐ Grossolana ☐ Molto Grossolana

Materiale //

Trattamento //

	Firma	Data
Verifica		26/11/01
Approvazione		26/11/01

Formato A3

Disegno N° M30281DI | Revisione - | Foglio 1 di 2 | Scala //

Titolo

DISEGNO D'ASSIEME UNITA' MTR-ST MIXER PC
(MTR-ST MIXER Unit Assembly Drawing)

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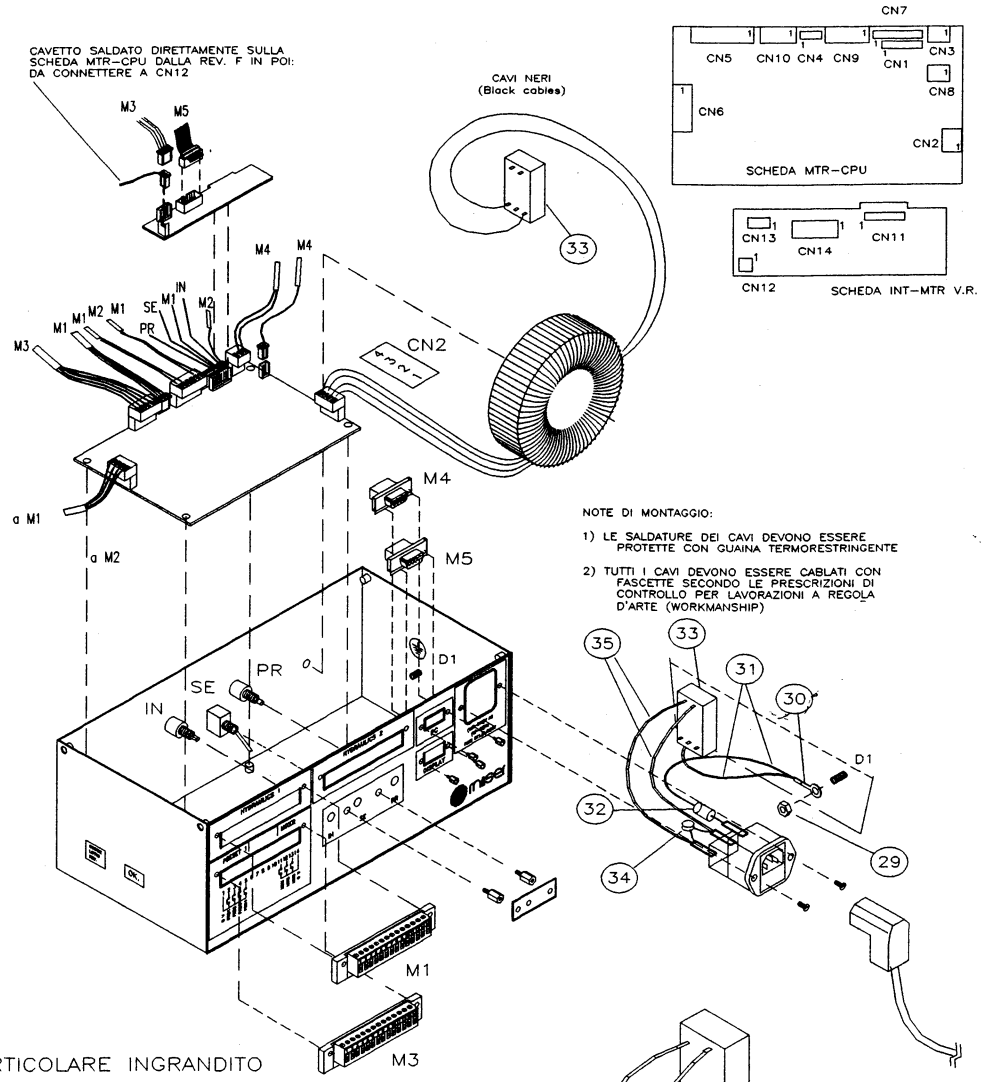
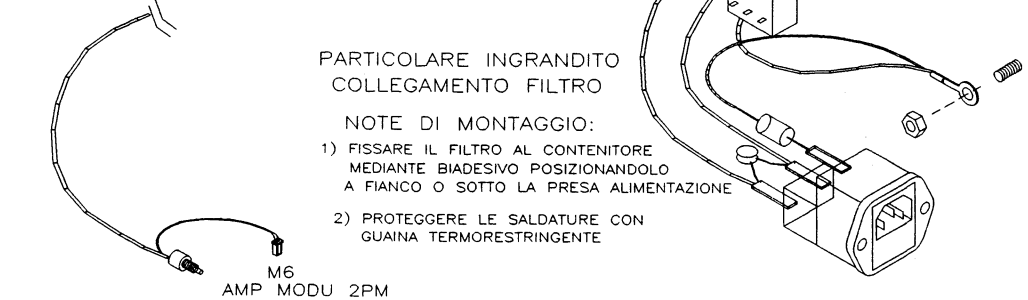
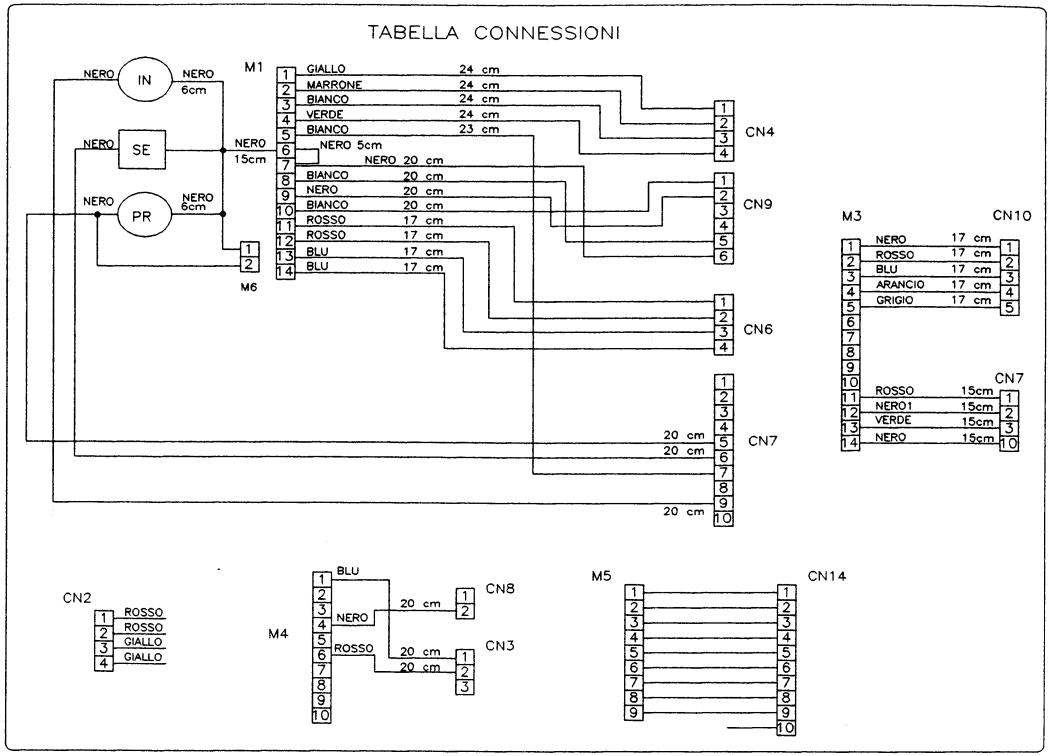

CAVETTO SALDATO DIRETTAMENTE SULLA SCHEDA MTR-CPU DALLA REV. F IN POI: DA CONNETTERE A CN12
CAVI NERI (Black cables)
CN7
CN5 CN10 CN4 CN9 CN1 CN3 CN8
CN6
CN2
SCHEDA MTR-CPU
CN13 CN14 CN11
CN12
SCHEDA INT-MTR V.R.
M3 M5 M4 M4 M1 M1 M2 M1 SE M1 IN M2 PR M3
CN2
33
M4
a M1
a M2
M5
D1
SE
PR
IN
M1
M3
NOTE DI MONTAGGIO:
1) LE SALDATURE DEI CAVI DEVONO ESSERE PROTETTE CON GUAINA TERMORESTRINGENTE
2) TUTTI I CAVI DEVONO ESSERE CABLATI CON FASCETTE SECONDO LE PRESCRIZIONI DI CONTROLLO PER LAVORAZIONI A REGOLA D'ARTE (WORKMANSHIP)
35 33 31 30 D1 32 29 34


PARTICOLARE INGRANDITO
1) FISSARE M6 AI CABLAGGI CON FASCETTA
M6
AMP MODU 2PM
PARTICOLARE INGRANDITO
COLLEGAMENTO FILTRO
NOTE DI MONTAGGIO:
1) FISSARE IL FILTRO AL CONTENITORE MEDIANTE BIADESIVO POSIZIONANDOLO A FIANCO O SOTTO LA PRESA ALIMENTAZIONE
2) PROTEGGERE LE SALDATURE CON GUAINA TERMORESTRINGENTE



POS	CODICE	DESCRIZIONE	Qt./Lungh.	POS	CODICE	DESCRIZIONE	Qt./Lungh.
29	M11484	DADO ø4 OTTONE	1	–	M11704	CAVO UNIPOLARE AWG22 GIALLO	vedi tabella
30	M11675	CAPOCORDA 6 mm	1	–	M11703	CAVO UNIPOLARE AWG22 MARRONE	vedi tabella
31	M11691	CAVO UNIP. 1X1 TERRA	2 X 0,15m	–	M11696	CAVO UNIPOLARE AWG22 BIANCO	vedi tabella
32	M10451	INDUTTANZA VK200	1	–	M11699	CAVO UNIPOLARE AWG22 VERDE	vedi tabella
33	M10177	FILTRO RETE C.S. FAHAV3100ZE	1	–	M11695	CAVO UNIPOLARE AWG22 NERO	vedi tabella
34	M11122	VDR 245 V-GEMOV	1	–	M11694	CAVO UNIPOLARE AWG22 ROSSO	vedi tabella
35	M11695	CAVO UNIP. AWG22 NERO	2 X 15 cm	–	M11701	CAVO UNIPOLARE AWG22 BLU	vedi tabella
–	M11896	PUNTALE AI3 ARANCIO	15	–	M11702	CAVO UNIPOLARE AWG22 ARANCIO	vedi tabella
–	M12163	PUNTALE AI GIALLO	4	–	M11700	CAVO UNIPOLARE AWG22 GRIGIO	vedi tabella
–	M12209	CONNETTORE AMP MODU II 10P.F.	1	–	M11247	CAVO FLAT 10 POLI	20cm
–	M12208	CONNETTORE AMP MODU II 4P.F.	2	–	M12705	CONN. AMP. MODU2	1
–	M11185	CONNETTORE P.I. 10P.F.	1	–	M12370	CONN. AMP. MODU 2PM	1
–	M12077	CONTATTO PER AMP MODU2	14				

Disegno N°	M30281DI	Revisione	-	Foglio 2 di 2	Scala //

Titolo

DISEGNO D'ASSIEME UNITA' MTR-ST MIXER PC (MTR-ST MIXER Unit Assembly Drawing)

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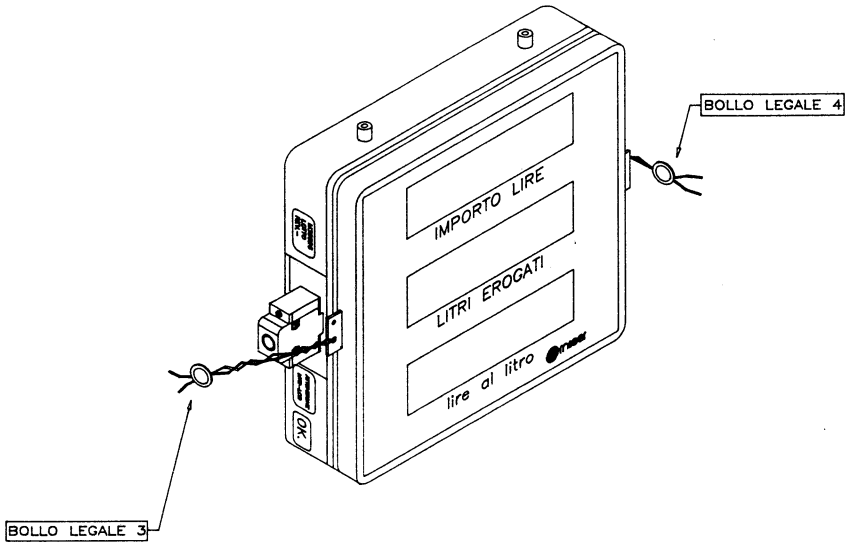
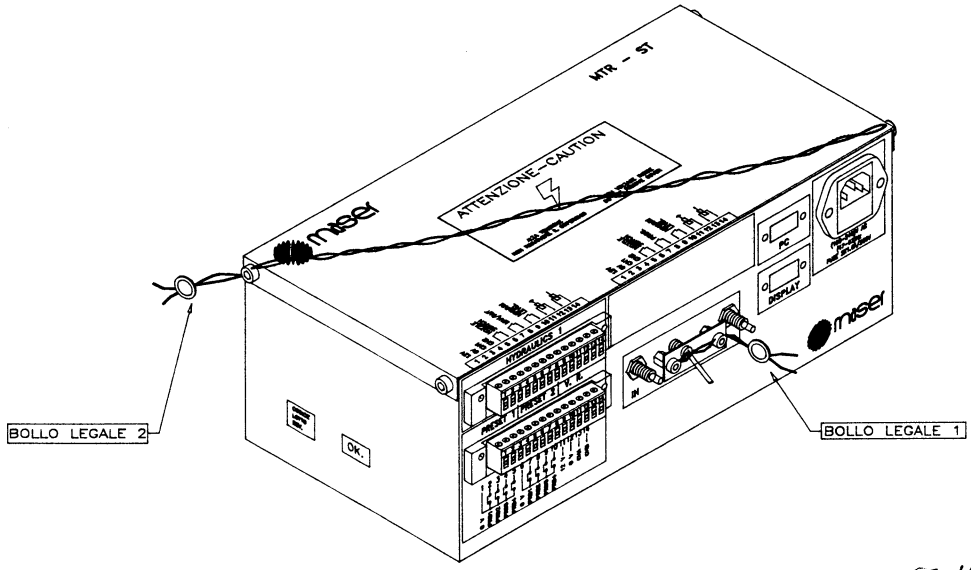


BOLLO	PROTEZIONE
1	INTERRUTTORE PARAMETRI DI PROGRAMMAZIONE
2	VINCOLO CPU
3	VINCOLO CONNETTORE DISPLAY
4	VINCOLO DISPLAY



STATO DI REVISIONE DEI FOGLI	Foglio	1	2	3	4	5	6	7	8	9	10
	Rev.	A									

Foglio di 1 1	Assieme Superiore	Formato A2☐ A3☐ A4☐	SALVO DIVERSA INDICAZIONE
		GESTIONE CONFIGURAZIONE	Le quote sono espresse in mm Le tolleranze sono espresse in micron
Materiale		Revisione A / Visto / Data 25/11/97	ANGOLI ±1
			TOLLERANZE GENERALI: Grado di precisione MEDIO UNI 5307
Progetto P1080	Scala	Firma / Data	Rugosità superficiale ✓
Disegno N° M03330NT		Diseg. 20/11/97 Appro. 20/11/97	

Titolo

PIANO DI LEGALIZZAZIONE APPARECCHIATURA MTR-ST

Disegno di proprietà della

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che si riserva i diritti sanciti dalle leggi

REVISIONI

Ind. Rev.	N° OM	Descrizione	Data	Approvazione
A	1896	Inserito vincolo connettore	20/11/97	Tedeschi Mauro
–	–	Emissione	06/06/96	

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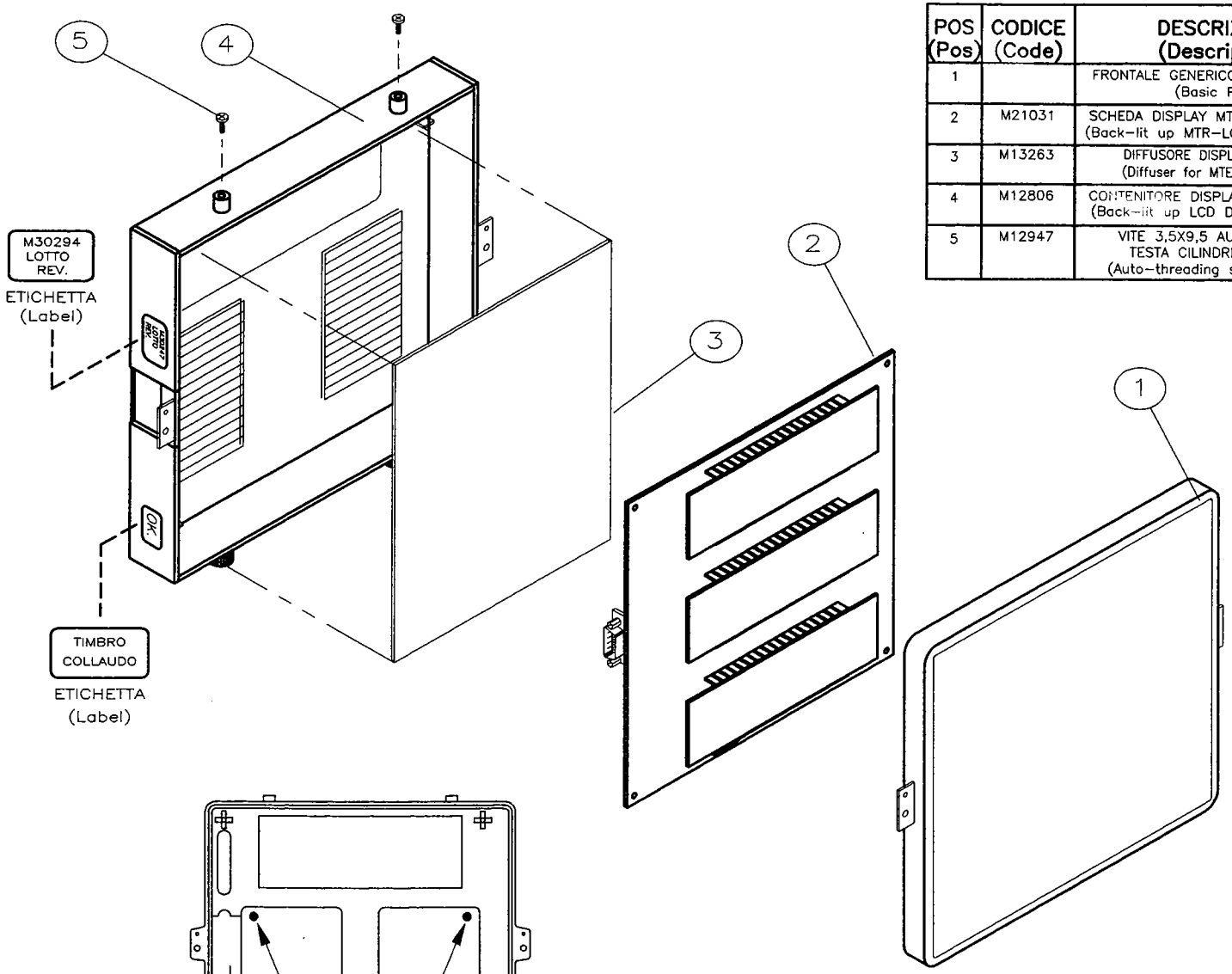
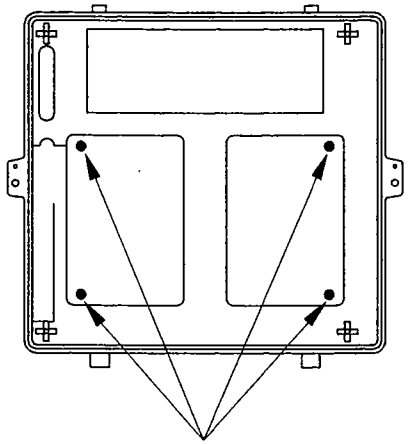


POS (Pos)	CODICE (Code)	DESCRIZIONE (Description)	Qt./Lungh. (Quantity)
1		FRONTALE GENERICO DI PROTEZIONE (Basic Panel)	1
2	M21031	SCHEDA DISPLAY MTR-LCD RETROILL. (Back-lit up MTR-LCD Display board)	1
3	M13263	DIFFUSORE DISPLAY MTE/MTR (Diffuser for MTE/MTR Display)	1
4	M12806	CONTENITORE DISPLAY LCD RETROILL. (Back-lit up LCD Display enclosure)	1
5	M12947	VITE 3,5X9,5 AUTOFILETTANTE TESTA CILINDRICA ZINCATA (Auto-threading screw 3,5X9,5)	2



Nota: Incollare il diffusore (3) all'interno del contenitore (4), allineandolo verso destra e applicando della colla Attack 454 nei punti indicati.

Ind. Rev.	N° ODM	Emissione Descrizione	Data	Disegnatore
		REVISIONI	01/03/02	A.Rivani

SALVO DIVERSE INDICAZIONI TOLLERANZE GENERALI ISO 22768/1 ☐ Fine ☐ Media ☐ Grossolana ☐ Molto Grossolana

Materiale //

Trattamento //

	Firma	Data
Verifica	MA	07/03/02
Approvazione		7/3/2

Formato A3

Disegno N° M30294DI | Revisione - | Foglio 1 di 1 | Scala -

Titolo

DISEGNO D'ASSIEME UNITA' DISPLAY MTR-LCD FAR EAST BASE
MTR-LCD Display Unit Far East Basic Assembly Drawing

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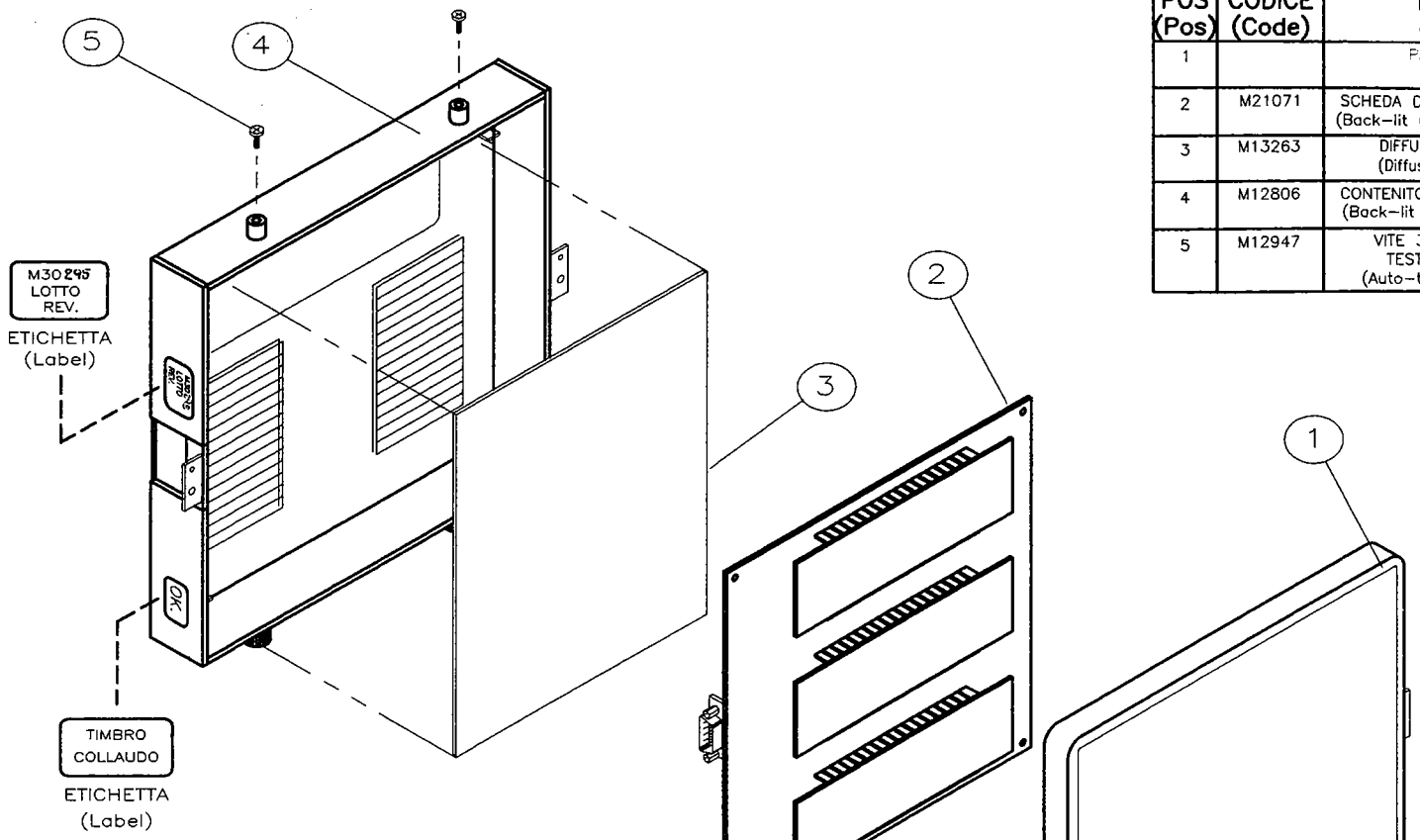
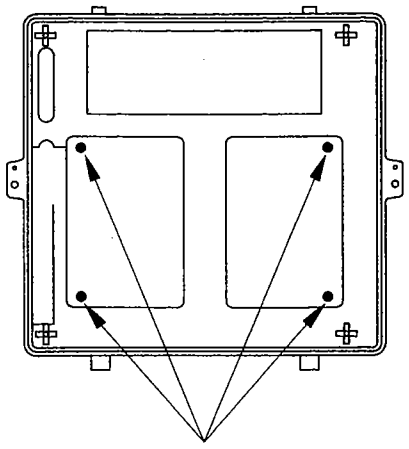


POS (Pos)	CODICE (Code)	DESCRIZIONE (Description)	Qt./Lungh. (Quantity)
1		PANNELLO GENERICO (Basic Panel)	1
2	M21071	SCHEDA DISPLAY MTR-LCD RETROILL. (Back-lit up MTR-LCD Display board)	1
3	M13263	DIFFUSORE DISPLAY MTE/MTR (Diffuser for MTE/MTR Display)	1
4	M12806	CONTENITORE DISPLAY LCD RETROILL. (Back-lit up LCD Display enclosure)	1
5	M12947	VITE 3,5X9,5 AUTOFILETTANTE TESTA CILINDRICA ZINCATA (Auto-threading screw 3,5X9,5)	2



Nota: Incollare il diffusore (3) all'interno del contenitore (4), allineandolo verso destra e applicando della colla Attack 454 nei punti indicati.

Emissione	Descrizione	Data	Disegnatore
		01/03/02	A.Rivani

REVISIONI

Ind. Rev.	N°	Data

SALVO DIVERSE INDICAZIONI TOLLERANZE GENERALI ISO 22768/1 ☐ Fine ☐ Media ☐ Grossolana ☐ Molto Grossolana

Materiale //

Trattamento //

	Firma	Data
Verifica	MA	08.03.02
Approvazione		7/3/2

Formato A3

Disegno N° M30295DI | Revisione - | Foglio 1 di 1 | Scala -

Titolo

DISEGNO D'ASSIEME UNITA' DISPLAY MTR-LCD-T FAR EAST BASE

MTR-LCD-T FarEast Basic Display assembly drawing

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SOLUZIONI PER L'AUTOMAZIONE

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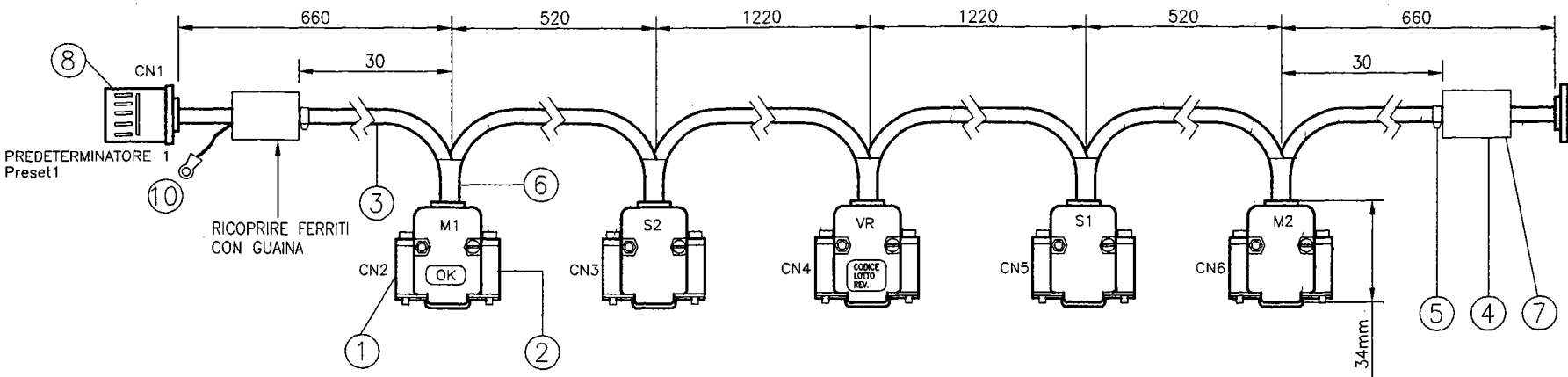
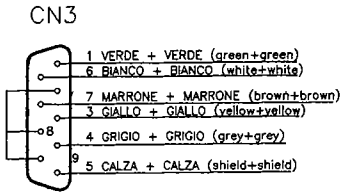
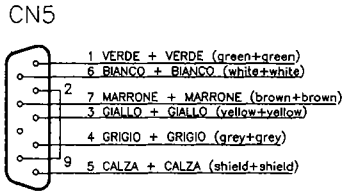
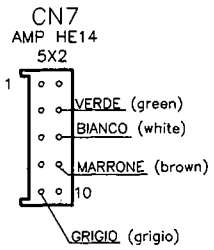
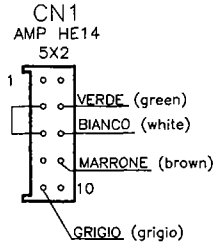


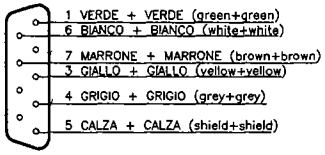

CN3
1 VERDE + VERDE (green+green)
6 BIANCO + BIANCO (white+white)
7 MARRONE + MARRONE (brown+brown)
3 GIALLO + GIALLO (yellow+yellow)
4 GRIGIO + GRIGIO (grey+grey)
5 CALZA + CALZA (shield+shield)

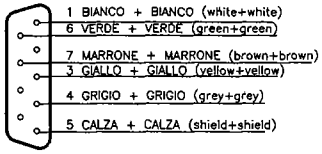

CN5
1 VERDE + VERDE (green+green)
6 BIANCO + BIANCO (white+white)
7 MARRONE + MARRONE (brown+brown)
3 GIALLO + GIALLO (yellow+yellow)
4 GRIGIO + GRIGIO (grey+grey)
5 CALZA + CALZA (shield+shield)

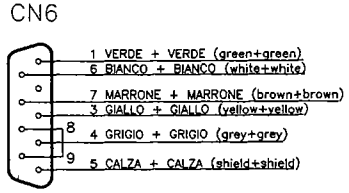


LATO SALDATURE




CN2
1 VERDE + VERDE (green+green)
6 BIANCO + BIANCO (white+white)
7 MARRONE + MARRONE (brown+brown)
3 GIALLO + GIALLO (yellow+yellow)
4 GRIGIO + GRIGIO (grey+grey)
5 CALZA + CALZA (shield+shield)


CN4
1 BIANCO + BIANCO (white+white)
6 VERDE + VERDE (green+green)
7 MARRONE + MARRONE (brown+brown)
3 GIALLO + GIALLO (yellow+yellow)
4 GRIGIO + GRIGIO (grey+grey)
5 CALZA + CALZA (shield+shield)


CN6
1 VERDE + VERDE (green+green)
6 BIANCO + BIANCO (white+white)
7 MARRONE + MARRONE (brown+brown)
3 GIALLO + GIALLO (yellow+yellow)
4 GRIGIO + GRIGIO (grey+grey)
5 CALZA + CALZA (shield+shield)

POS	CODICE	DESCRIZIONE	Qt./Lungh.	NOTE
1	M10949	CONNETTORE VASCHETTA 9 P.F.	5	
2	M11673	CAPPUCCIO 9P. PC	5	lungh. cappuccio < 34mm
3	M14827	CAVO SCHERMATO ANTIF. 6X0.22	5,12mt	
4	M13682	FERRITE CILINDRICA CHIUSA	2	
5	M11253	FASCETTA PICCOLA	4	
6	M12184	GUAINA TERM. PLG250	0,06mt	a protezione dei cavi
7	M10196	GUAINA TERM. PLG375	0,28mt	a protezione delle ferriti
–	M12181	GUAINA TERM. PLG63	0,28mt	a protezione delle saldature
8	M15258	CONN. AMP. HE14 5X2F	2	
9	M15259	CONTATTO PER HE14	10	
–	M12182	GUAINA TERM. PLG93	0,25mt	
–	M11601	GUAINA TERM. PLG750	0,13mt	
10	M10792	CAPOCORDA	1	

NOTE :

1- COLLEGARE LA CALZA SOLO DA LATO CN1
(CONNECT THE SHIELD TO CN1 SIDE)

2 - POSIZIONARE COME DA QUOTE INDICATE
(RESPECT THE LENGH)

3 - LE DISTANZE DEI CAVI SI RIFERISCONO DA CONNETTORE A CONNETTORE
(THE LENGHS REFERRING CONNECTOR TO CONNECTOR)

Ind. Rev.	N° OM	Descrizione	Data	Disegnatore
B	2496	Eliminato cavo giallo dal connettore CN1 e CN7	27/03/02	A.Rivani
A	2446	Cambiati connettori CN1e CN7	06/12/01	A.Rivani
-	-	Emissione	12/06/01	A.Rivani

REVISIONI

SALVO DIVERSE INDICAZIONI TOLLERANZE GENERALI ISO 22768/1	☐ Fine	☐ Media	☐ Grossolana	☐ Molto Grossolana
Materiale //			Firma	Data
			Verifica Enrico Trovato	28/03/02
Trattamento //			Approvazione	28/03/02
			Formato A3	
Disegno N° M21051TO	Revisione B	Foglio 1 di 1	Scala //	

Titolo
CAVO DISPLAY/PRED. SERIALE TESTATA MTR D/B FAR EAST
MTR D/B FAR EAST DISPLAY/SERIAL PRESET CABLE

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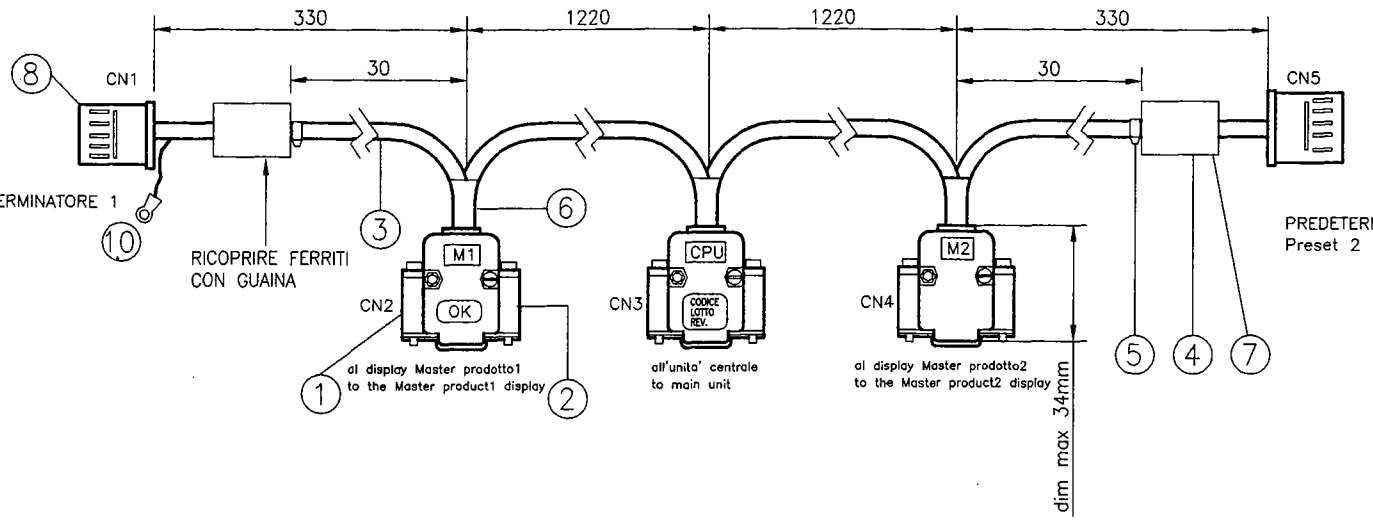
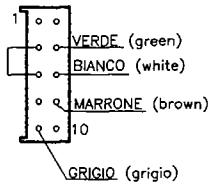
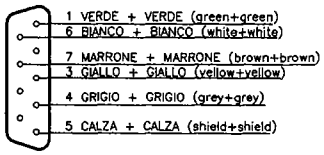


LATO INSERIMENTO FILI

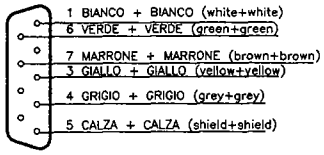
CN1
AMP HE14
5X2



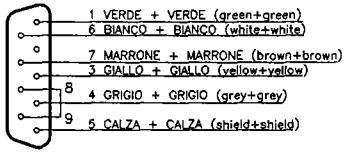
CN2


1 VERDE + VERDE (green+green)
6 BIANCO + BIANCO (white+white)
7 MARRONE + MARRONE (brown+brown)
3 GIALLO + GIALLO (yellow+yellow)
4 GRIGIO + GRIGIO (grey+grey)
5 CALZA + CALZA (shield+shield)

CN3

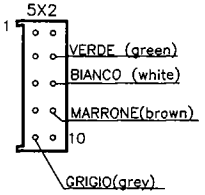

1 BIANCO + BIANCO (white+white)
6 VERDE + VERDE (green+green)
7 MARRONE + MARRONE (brown+brown)
3 GIALLO + GIALLO (yellow+yellow)
4 GRIGIO + GRIGIO (grey+grey)
5 CALZA + CALZA (shield+shield)

CN4


1 VERDE + VERDE (green+green)
6 BIANCO + BIANCO (white+white)
7 MARRONE + MARRONE (brown+brown)
3 GIALLO + GIALLO (yellow+yellow)
8
4 GRIGIO + GRIGIO (grey+grey)
9
5 CALZA + CALZA (shield+shield)

LATO INSERIMENTO FILI

CN5
AMP HE14
5X2



POS	CODICE	DESCRIZIONE	Qt./Lungh.	NOTE
1	M10949	CONNETTORE VASCHETTA 9 P.F.	3	
2	M11673	CAPPUCCIO 9P. PC	3	lungh. cappuccio < 34mm
3	M14827	CAVO SCHERMATO ANTIF. 6X0.22	3,46mt	
4	M13682	FERRITE CILINDRICA CHIUSA	2	
5	M11253	FASCETTA PICCOLA	4	
6	M12184	GUAINA TERM. PLG250	0,06mt	a protezione dei cavi
7	M10196	GUAINA TERM. PLG375	0,28mt	a protezione delle ferriti
–	M12181	GUAINA TERM. PLG63	0,28mt	a protezione delle saldature
8	M15258	CONN. AMP. HE14 5x2F	2	
9	M15259	CONTATTO PER AMP. HE14	10	
–	M12182	GUAINA TERM. PLG93	0,25mt	
–	M11601	GUAINA TERM. PLG750	0,13mt	
10	M10792	CAPOCORDA	1	

NOTE :

1- COLLEGARE LA CALZA SOLO DA LATO CN1
(CONNECT THE SHIELD TO CN1 SIDE)

2 - POSIZIONARE COME DA QUOTE INDICATE
(RESPECT THE LENGH)

3 - LE DISTANZE DEI CAVI SI RIFERISCONO DA CONNETTORE A CONNETTORE
(THE LENGHS REFERRING CONNECTOR TO CONNECTOR)

4 - IDENTIFICARE I CONNETTORI CON LE APPOSITE ETICHETTE
(IDENTIFY THE CONNECTORS WITH LABELS)

REVISIONI					
Ind. Rev.	N° OM	Descrizione	Data	Disegnatore
A	2496	Eliminato cavo giallo dal connettore CN1 e CN5 Emissione	27/03/02 30/07/01	A.Rivani A.Rivani

SALVO DIVERSE INDICAZIONI TOLLERANZE GENERALI ISO 22768/1 ☐ Fine ☐ Media ☐ Grossolana ☐ Molto Grossolana

Materiale //		Verifica Tonelli Francesco	Firma / Data 28/03/02
Trattamento //		Approvazione	28/03/02
Disegno N° M21069TO	Revisione A	Foglio 1 di 1	Formato A3 / Scala //

Titolo
CAVO DISPLAY TESTATA MTR D/M FAR EAST

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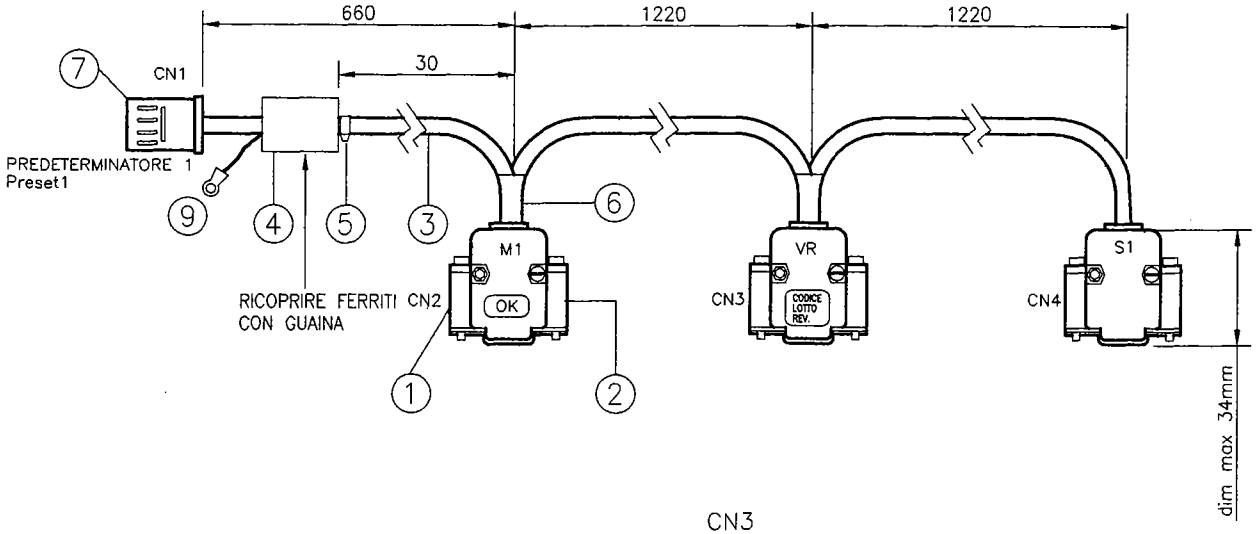
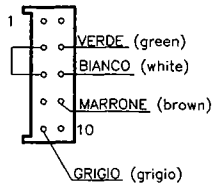


LATO SALDATURE

CN1
AMP HE14
5X2



CN2

1 VERDE + VERDE (green+green)
6 BIANCO + BIANCO (white+white)
7 MARRONE + MARRONE (brown+brown)
3 GIALLO + GIALLO (yellow+yellow)
4 GRIGIO + GRIGIO (grey+grey)
5 CALZA + CALZA (shield+shield)

CN3

1 BIANCO + BIANCO (white+white)
6 VERDE + VERDE (green+green)
7 MARRONE + MARRONE (brown+brown)
3 GIALLO + GIALLO (yellow+yellow)
4 GRIGIO + GRIGIO (grey+grey)
5 CALZA + CALZA (shield+shield)

CN4

1 VERDE + VERDE (green+green)
6 BIANCO + BIANCO (white+white)
2
7 MARRONE + MARRONE (brown+brown)
3 GIALLO + GIALLO (yellow+yellow)
4 GRIGIO + GRIGIO (grey+grey)
9
5 CALZA + CALZA (shield+shield)

NOTE :

1- COLLEGARE LA CALZA SOLO DA LATO CN1
(CONNECT THE SHIELD TO CN1 SIDE)

2 - POSIZIONARE COME DA QUOTE INDICATE
(RESPECT THE LENGH)

3 - LE DISTANZE DEI CAVI SI RIFERISCONO DA CONNETTORE A CONNETTORE
(THE LENGHS REFERRING CONNECTOR TO CONNECTOR)

UTILIZZARE LA DISTINTA BASE PER CONTROLLO ARTICOLI UTILIZZATI

Ind. Rev.	N° OM	Descrizione	Data	Disegnatore
B	2496	Eliminato cavo giallo dal connettore CN1	27/03/02	A.Rivani
A	2473	Eliminata Lista delle parti	13/02/02	A.Rivani
-	-	Emissione	06/12/01	A.Rivani

REVISIONI

SALVO DIVERSE INDICAZIONI TOLLERANZE GENERALI ISO 22768/1	☐ Fine	☐ Media	☐ Grossolana ☐ Molto Grossolana
Materiale //			Firma / Data
			Verifica Tonelli Franco 28/3/02
Trattamento //			Approvazione 28/03/02
			Formato A3
Disegno N° M21107TO	Revisione B	Foglio 1 di 1	Scala //

Titolo
CAVO DISPLAY/PRED. SERIALE TESTATA MTR S/B FAR EAST
MTR S/B FAR EAST DISPLAY/SERIAL PRESET CABLE

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CE

We, **MASER srl**

Via dell'Industria, 40
I - 40064 Ozzano Emilia (BO)
Telephone: ++39-(0)51-791711
Facsimile: ++39-(0)51-791718
E-mail: info@maser.it, www.maser.it

hereby declare under our sole responsability that the equipment

MTR–ST Far East electronic head

to which this declaration relates is in conformity with the following European product safety directives:

Low Voltage Directive 73/23/EEC
Electromagnetic Compatibility Directive 89/336/EEC

as is verified by compliance with the following standards:

EN 50081-1	**EN 50082-1**	**EN 55022 classe A**
EN 61000-3-2	**EN 61000-3-3**	**EN 55014-1**
EN 55014-2	**EN 60065**	**EN 61000-4-2**
EN 61000-4-3	**EN 61000-4-4**	

Ozzano Emilia, 05.09.2000

Mauro Tedeschi
Name

Signature

Production Director
Title

maser
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